IMPLEMENTATION OF OPERATIONAL ENVIRONMENTAL PRACTICES IN THE ONTARIO (CANADA) WINE INDUSTRY: PERCEPTIONS, CONSTRUCTS, INTENT

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Submitted for the Doctor in Business Administration degree

May 2010

ABSTRACT

Environmental sustainability is a topic of great interest in the Ontario (Canada) wine industry. Following the lead of several wine industries around the world, the Wine Council of Ontario launched a proactive plan for environmental sustainability that culminated with the release of the Environmental Charter for Winemaking Industry in 2007. The Charter outlines environmental best practices and establishes benchmarks for the grape and wine producers in Ontario. With some wineries pioneering the implementation of the recommended environmental practices and others taking a backseat and delaying it, this study's purpose is to understand the intent to implement environmental practices as part of operational processes within the Ontario (Canada) wine industry by using the Theory of Planned Behaviour (TPB) as the framework of analysis. A constructivist approach using multiple case study design is used to explore the determinants of intention. Twenty wineries are interviewed and repertory grid employed as the chosen technique of data collection. Cluster, content and principal component analysis are conducted with the results indicating that TPB is an appropriate frame of analysis for implementation intent. Using a multidisciplinary approach, this study proposes an updated model for intention applicable to environmental practices. As a practical contribution, recommendations and a list of motivators of implementation intent is developed. Further research to test the proposed model is suggested to alleviate case studies limitations.

ACKNOWLEDGEMENTS

Writing a doctoral thesis is a journey. And like any expedition the companionship makes the difference! Once more in my life I came to humbly realise that is not the work that keeps you motivated, it is the people around you that makes it interesting and worthwhile.

For me it's been a fabulous adventure! It started in Scotland with Dr. Neil Kay who nurtured my research interest and kept me motivated to move forward. And let me tell you, there were times I was ready to "throw in the towel"!! His encouragement and vote of confidence kept me going. Thank you Dr. Kay!

And good thing it did, since it gave me the opportunity, the privilege and the honour to work with Dr. Devi Jankowicz. He is a remarkable person, dedicated, committed, and knowledgeable and all the good things you can think of! His ability to assess the right timing and the proper amount of motivation necessary is commendable. I never felt pushed, nor left behind. A great pace and an extraordinary learning experience!! Sincere thanks and evermore gratitude, Dr. Jankowicz!

Since my home is in Canada and the study took place here many people helped in bringing this study to fruition. Steve Gill at Niagara College, Regina Fosey at Wine Council of Ontario, Marty Jurmain at Niagara College, Tom Schultz at Niagara College and many others. Their wise advice and practical help kept me on the right path. To all of you a big heartfelt thank you!

Family and friends held my hand and helped preserve my sanity. My friend, Heather Clark, encouraged and persuaded me to try new avenues and not give up. My aunt Violette took the time and worked with me and learned about psychology. Occasionally, she would even cook for me. My boys Robert and Alex were absolute angels. Their patience and willingness to feed me when I'd forget to eat, kept my weight in line. They also used my vulnerability to make me buy a dog! I love you all!!

My amazing husband held my hand and picked up after me when needed. Not only that he came to appreciate the learning that goes into a doctoral degree, he himself had to do his own learning: he learned how to do the laundry, cook and clean after my pets! You are the best, Love!!

Last, but not least, Dr.Wallace's unrelenting willingness to help and his prompt responses made the journey even better. Thank you for everything Dr.Wallace!

I would also like to send a sincere thank you to all the Examiners and the Research Committee. Your help, patience and consideration are greatly appreciated!

And how can you write a research study without the participants? Thank you to all the wineries for your time, patience and willingness to talk. I've grown to love this industry for its people and their genuine dedication (I also like their product!).

You've all been an important part of my life for the last year, some even more. My gratitude and sincere appreciation is hard to express in words. You touched my life and changed it for the better. I thank you all for that and hope that life will give me the opportunity to return the favour. Cheers!

Carmen Dima

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CHAPTER 1: INTRODUCTION

1.1 Aims

The interface between business and natural environment creates ample uncertainty and ambiguity that has to be reconciled by the managers on a daily basis. The complexity is further aggravated by elements such as structure of the organization, competition, political interference, organizational culture.

Ontario's grape and wine industry is at a turning point marked by change in customers' taste and demands, emerging global markets and enhanced competition from low-cost producers. Identifying opportunities that would improve profitability and sustainability for the long-term in conjunction with a response to a changing environment and legislation is crucial. In response to these factors, the regional policy makers initiated (2007) an Environmental Charter that addresses main issues regarding energy, water, waste and pesticides management and outlines and recommends best practices as means to industry sustainability. Although not mandatory, the Environmental Charter compels corporations to pay environmental attentiveness.

Due to its emergent and novel stage of development, environmental practices in Ontario's grape and wine industry are still voluntary and perceived as only a potential means of gaining and maintaining competitive advantage. As such, some organizations adopt it, some not, while some delay it. It is believed that different judgements are a result of organizational beliefs and resources (Sharma 2000), contextual regulatory environment (Sharma, 2000, 1999) and their relationships. As such, early and voluntary adoption of environmentally responsible practices would be a result of managerial choice based on their interpretations of potential impact on the organization (Sharma 2000, Dutton and Duncan 1987).

In order to understand these interpretations that propel some organizations to implement or not an environmentally sustainable practice within their operations, it is suggested that a process-oriented cognitive examination of intent (to implement) would be a reliable predictor of ultimate adoption.

The concept of intent is central to social-psychology theory. Intent/intention comprises of two elements: goal intention and implementation intention. Implementation intention is a

powerful self-regulatory strategy that promotes immediate execution of goal-directed behaviour (Brabdstatter, Lengfekder, and Golwitzer 2001).

Implementing environmental practices at the operational level differs from a goal intention. Goal intentions are the type of:"I intend to do this", while the implementation intention services the goal intention and specifies when, where and how of a goal-directed response. "Forming implementation intentions leads to the automatic initiation of the specific behaviour once the critical anticipated stimulus is actually encountered" (Brabdstatter, Lengfekder, Golwitzer 2001, p. 947). Therefore, understanding the implementation intentions of the decision makers would be a strong predictor of subsequent behaviour (actual implementation at the operational level). As such, the aim of this research is to understand the intention of decision makers in the Ontario (Canada) wine industry to implement environmental practices at the operational level.

1.2 Background and organizational context and rationale

It has been more than 10 years since the wine industry in Niagara began experiencing a rapid growth. Some of the factors enabling this development were the introduction of new varieties such as Riesling, Chardonnay, Cabernet and Gamey that thrived in Niagara's cool climate as well as the reduction in trade barriers (1988 a critical year since tariffs reduction scheme Canada-FTA took place, the Wine Content Act in Ontario was revised and Labrusca varieties (grapes containing a chemical called methyl anthranilate) were banned from table wines, Vintners Quality Alliance was introduced in Ontario, an appellation system requiring that the wines be 100 per cent grown in designated viticultural areas) allowed Niagara wines to access and compete in the global markets. As a global leader in the production of Ice-wine, Niagara region became an international destination. The 7th annual report produced for VinExpo in Bordeaux by the British firm IWSR indicates that the Canadian wine market is the fastest growing wine consumer market in the world and is expected to maintain a steady 6.5% increase through 2012.

"Wine is the highest value-added agro-food product in the world" (Canadian Grape and Wine Research Strategy, 2007) and as such has attracted a large number of investors. Characterised as rather a "fragmented industry" (Porter 1998, p. 205) and highly

competitive, its long-term sustainability is determined by its ability to adapt to changing market and environmental conditions.

Climate has a significant impact on the grape and wine production in Niagara. The primary concern for the region is winter survival. While the drastic fluctuations in the climate can limit high-quality production, the increase in urban centres adjacent to the agriculture zones could also obstruct the opportunities for growth and sustainability. In addition, the Canadian Food Inspection Agency is contemplating the creation of a domestic certification program for the production of grapevines in Canada that would address the risk of importing pests and /or diseased plants detrimental to the development of a healthy Niagara.

The environmental issues specific to this region have been acknowledged by both Canadian provincial and federal governments as high priorities for economic sustainability. February 2006 marked the Ontario's Greenbelt Act that protects 1.8 million acres of agricultural and environmentally significant land from the urban sprawl and encourages streamlining processes related to the agricultural industry. The Regional Niagara Business Plan in conjunction with Regional Niagara Sustainability Plan and Regional Niagara Smart Growth Planning policy supports and promotes a " healthy environment and planned land uses that balance the need for growth with the need to protect our green space". Niagara's Economic Growth Strategy recognises the contribution made by the wine industry to the local development and supports the initiatives geared at identifying environmental resources and developing measures for their protection.

Identifying paths in archiving environmental sustainability was instigated by the Wine Council of Ontario (WCO) and culminated with the release of the Environmental Charter for Wine making Industry in 2007 (Sustainable wine making Ontario). The Charter outlines environmental best practices and establishes benchmarks for the grape and wine producers in Ontario related to water, waste, and energy conservation as well as pest and pesticide management. Even though compliance with the Charter's recommendations is not mandatory yet, the organizations are advised to review their practices not only as a proactive strategic approach but also as a means to sustain their growth and competitive advantage.

The environmental issues present in Ontario at this time have triggered different responses within the existing organizations. While some wineries were eager to adopt ground-breaking operational practices, several chose to maintain their existing processes and delay any new implementations. This study's aim therefore, is to understand the constructs behind different responses regarding implementation of environmental practices at the operational level within Ontario's wine industry.

1.3 Theoretical overview

Strategy formulation and implementation theory states the importance of a proper fit between the organization and its external environment. As a result of a changing external climate, land and environmental conditions the organizations are required to adopt unique innovative processes in order to preserve the environment as well as the organization's viability. As such, the adoption process would be an organizational phenomenon not an environmental one (Tabak and Barr, 1998). Since the matter of adopting an environmental practice as part of the operational processes is an organizational issue and requires creativity and entrepreneurial spirit, it is necessary to understand the triggers of entrepreneurial behaviour. Relevant models that analysed planned, purposive behaviours with a remarkable robustness in practice derived from social psychology research. In particular the Theory of Planned Behaviour (Ajzen 1991) has been the most successful one used to predict intention and subsequent behaviour.

Ajzen's planned behaviour model came as an extension of the Theory of Reasoned Action (TRA)(Ajzen and Fishbein, 1975) and states that intentions are a combined result of behavioural attitudes (positive or negative evaluation of the act of performing the behaviour), subjective norms (or social pressures) and perceived behavioural control (perception of ease or difficulty in performing the behaviour). The difference between the theory of reasoned action (TRA) and the theory of planned behaviour (TPB) is reflected by the addition of the last element: behavioural control or perceived control. Taken all together, the three elements, behavioural attitude, subjective norm and perceived behavioural control, will define the *intention/disposition* to perform certain behaviour. This behavioural intention is considered the immediate determinant of an attempt to perform behaviour. As Ajzen (1991 p. 188) postulates: "As a general rule the more

favourable the attitude and subjective norm with respect to the behaviour and the greater the perceived behavioural control the stronger an individual intention to perform the behaviour under consideration".

Comparable with Ajzen's planned behaviour model, the business research area identified two models as predictive of behaviour: Strategic Issue Diagnosis (SID) and Shapero's Model of Entrepreneurial intentions. The strategic issue diagnosis process clarifies the strategic adaptation process by specifying the actual assessments that decision makers undertake in the anticipatory phase (Dutton and Duncan 1987). It argues that diagnosis and further behaviour is derived from two factors: perceived feasibility (combining perceived desirability and perceived capability) and perceived urgency (combining payoff, time pressures, visibility and management responsibility). Shapero's model of entrepreneurial intentions suggests that intentionality is a combined effect of perceived desirability and perceived feasibility both moderated by propensity to act (as the volitional component of intention) (Krueger 1993). As a measure of proactivness, the propensity to act is related to perceived feasibility (locus of control) (Krueger 1993).

Based on the similarities found between the above models, the Theory of Planned Behaviour is used as the dominant theoretical framework and the most comprehensive paradigm, and employed to investigate its applicability in understanding and predicting the choice of implementing environmental policies (defined as the intention to adopt environmental practices at the operational level). The choice of theory is based on the fact that TPB proved its robustness in predicting intent and subsequent behaviour in studies regarding voting behaviours (Granberg and Holmberg 1990), consumption of alcohol (Conner, Warren, Close and Sparks 1999), purchase of environmentally friendly products (Kalafatis, Pollard, East and Tsogas, 1999) as well as consumption of soy products (Rah, Hasler, Painter, Chapman-Navokofski 2004). In the business area, the model was successfully used to examine entrepreneurial intentions (Krueger 1993), innovation adaptation (Tabak and Barr 1998) as well as to explain farmers' land conservation behaviours (Beedel and Rehman 2000) and policy making in agricultural studies (Burton 2004). In particular, Beedel and Rehman (2000 p. 118) found TPB to be a "replicable, robust methodology that proved that conservation concerns have penetrated the farmers' thinking".

1.4 Research focus

Given the uncertainty and variability in the processes involved in an voluntary environmental response, this study purposes identification and insight into constructs related to the attitudes, subjective norms and perceived behavioural control as determinants of intention and as such triggers of intent and adoption of environmental practices at operational level in the grape and wine industry in Ontario.

The objective of the study is to understand the intent to implement environmental practices as part of operational processes in organizations within the Ontario grape and wine industry by determining the constructs that underlie attitudes, social norms and perceived control as elements of intention.

Taking the above into consideration, the focus of the thesis is to gain a deeper understanding from the key decision makers of their constructs related to the intent of implementation of environmental practices within their operational processes by using the Theory of Planned Behaviour as a framework of analysis.

1.5 Research questions and objectives

Research Objective: to examine the extent to which adoption of environmental practices at operational level is an intentional behaviour within the Ontario Wine industry context. As a behavioural study, the Theory of Planned Behaviour's applicability in understanding responses in adopting a voluntary environmental practice at the operational level will be employed and modified accordingly.

Research questions:

1. What are the constructs and main drivers that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

2. To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intentions to adopt environmental practices at the operational level?

3. What is the magnitude of the gain/loss and reputation constructs and how does it affect the decision to implement environmental practices at the operational level?

4. What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

1.6 Research paradigm and methodology, sample design and data collection process

A constructivist approach, multiple case embedded case study design is used to explore the determinants of intention and address the research questions. Twenty case studies are purposefully selected to provide contrasting directions in implementing environmental policies (proactive vs. reactive) and repertory grids are employed as the technique of data collection that allows understanding of constructs underlying the directions adopted by organizations.

The anticipated outcomes of this research are:

a. To identify organizational constructs behind intentional behaviour specific to the Ontario wine industry
b. To further develop existing intentional and diagnosis model
c. To suggest implications for policy, practice and future research

1.7 Significance

This study contributes to the knowledge in a field that is dominated by physical and biological research (microbiology, oenology, pest control etc) by providing information on the decision-making processes in relation to the environmental attentiveness issue. This paucity of research has been emphasized by a recent signed memorandum of understanding between Brock University, Niagara College and Vineland research Institute to collaborators on agriculture research in order to help local economic development (Brock University 2009). It is anticipated that the results and findings would have implications at the local/regional policy making level regarding perceptions of necessity and urgency of adaptation of environmental practices at the organizational level. The Wine council of Ontario is contemplating the introduction of an Environmental Certification Program. This study will facilitate further developments within this initiative.

The study imports techniques and models from clinical and social psychology and personal construct psychology and applies them in a specific context: the Ontario (Canada) wine industry, with a main purpose of contributing to the refinement of the models in a business strategy context.

The technique proposed: repertory grid is less common in the business strategy field with widespread applications in marketing (Diaz de Leon and Guild 2003), consumer behaviour (Saba, Messina, Turrini, Lumbers, Raats 2008; Messina, Saba, Turrini, Raats Lumbers 2008) and many studies in human resources (Pierce 1989, Jankowicz 1990) and environmental studies (Tanner 1999). As such, its application in this study is anticipated to provide results that would allow refinement of the existing theories.

In addition, the thesis answers a call for single industry theory building studies involving cross-case analysis of different firms operating within same industry (Helfat 2000; Sarasvathy 2001) and a call for research using broad strategic issues (environmental practices) important for organizational development and understanding the effects of interpretation on response (Julian and Ofori-Dankwa 2007). Also, based on the theoretical framework and the findings of the study, contribution to further refinement of the existing intention model is anticipated.

1.8 Outline of thesis

In addition to this introduction chapter, the thesis will contain a total of five individual chapters as outlined below:

Chapter two presents a critical literature review. As outlined by Yin (2003), a strong and rich theory development is essential if the case study's purpose is to test and develop a theory. The theory development will not only facilitate the data collection, but also allow analytic generalization. The literature review outlines the main factors found to propel or constrain implementation of pro environmental practices using the theoretical background offered by TPB, SID and Shapero's model, as well as Personal Construct Theory. The chapter concludes with the research questions and their rationale.

Chapter three provides details regarding methodology: the research strategy, design, its rationale and limitations as well as the data collection and analysis process. The chapter also includes a pilot study.

Chapter four reflects the results obtained and data analysis.

Chapter five is dedicated to discussions and interpretations with references to the existing literature.

Chapter six indicates this study's contributions to literature and practice as well as the limitations of the study and suggestions for further research topics.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

The present study incorporates principles of TPB (Ajzen 1991, 2002), SID (Dutton, Duncan, 1987, 1991) and Shapero's Model of Entrepreneurial intentions (Krueger 1993, 2000) in order to explore the concept of intent defined as intentions of implementing environmental practices at the operational level within Ontario (Canada) grape and wine industry.

The literature on these theories is critically reviewed with the aim of exploring their strengths and similarities and their applicability in this research. As noted by Eisenhardt (1989), the researcher should be aware of key concepts deriving from the current literature yet be open to challenging them.

Studies of land-conservation behaviours using social-psychology models indicate Beedell and Rehman (1999, 2000) and Gorddard (1991, 1993) applying the TPB framework successfully and finding it as a reliable predictor of farmer's behaviour. Pro environmental behaviour also was investigated using Strategic Issue Diagnosis (SID) (Sharma 2000) while entrepreneurship behaviour used a cross between the two mentioned models: Shapero's Model of Entrepreneurship.

This chapter contains subsections to provide details about the wine industry in Ontario and the relevant findings of the above mentioned theories.

2.2. Ontario wine industry

This section introduces and positions the Ontario wine industry and its specific pressures associated with the implementation of environmental practices**.**

Nestled between the Great Lakes (Ontario and Erie lake), Niagara Escarpment and Niagara River, Ontario has became a prime wine-growing region providing high quality and unique selections of wine (Wine Council of Ontario 2007/2008).

Benefiting from a unique microclimate and similar latitudes as France, Italy and Spain, the wine industry in Ontario gained a highly praised international reputation for quality and distinction. In addition, the cool climate allows the production of ice-wine which became Ontario‘s signature product.

With more than 20,000 acres cultivated area, the grape and wine industry in Ontario recorded an impressive growth and impact on the Canadian economy. The number of active wineries increased from 20 (1990) to 125 in 2008, while the wine retail sales reached C$506 million, an impressive increase of 253% since 1990. The rapid development of this rather small industry facilitated an increase in the employment to around 6000 individuals and a total number of visitors in the area well over 1 million in 2008. Also, in 2007, Ontario wine industry exported more than 651,000 litres of wine with a corresponding value of C$16.4 million (WCO 2008) (expressed in nominal prices).

The growth and benefits of this industry in the domestic and international markets have been recognized by both provincial and federal governments. Initiatives and financial support allowed the development of new practices and access to other markets. For example in relation to Canada-US Free Trade agreement, the federal government provided C$6mil to assist grape and wine produces. At the same time, since 1989 more than C$50 mil has been allocated in creating Wine Council of Ontario to provide marketing and research and operate as a liaison between government agencies and Ontario wineries (Hall, Cambourne, Sharples, and Macionis 2000). The WCO has an active role in providing various benefits for its members (Ontario wineries) starting with marketing campaigns aimed at increasing awareness of the Ontario brand on both domestic and international markets and following with forging beneficial partnerships

and supporting a sustainable winemaking region by promoting environmental sustainability practices.

Sound environmental practices associated with cleaner production and eco-conscience (Agriculture and Agri-Food Canada 2009) became a slogan used by all multinational corporations regardless of their industry or country of origin. The grape and wine industry worldwide is dealing with a highly sensorial product that is often engrained in a country's culture. New varieties and new products bombard the markets on a regular basis, making the consumer's choice more difficult and the industry itself more competitive.

The international agencies are striving to develop farming and wine producing practices that insure quality and specific standards for the international markets by controlling the introduction of new pests, limiting the effects of vineyard development and genetic engineering. As such, a sustainable wine industry needs to incorporate both sound environmental practices and high product quality. Accordingly, the future of wine can be defined as follows: a blending of nutritional benefits and sound environmental practices with a perception of quality (Bisson, Waterhouse, Ebeler, Walker, Lapsley, 2002).

Environmental and social responsibility concepts reached the North American wine industry in the late 1990 with the development of an informal voluntary organization called Wine Vision (US wine industry). In order to ensure the development of a sustainable industry, in 2002 the organization issued a code for sustainable practices for the wine industry, outlining specific procedures aimed at maintaining and sustaining land stewardship, pest and water management (Marshall, Cordano, Silverman 2005). Similar initiatives/codes are present in Australia, British Columbia and European wine industries: 1999/2000 The code of good manufacturing practices for the Australian grape and wine industry, 2008 Life on the farm by European commission, 2004 Farm practices by the British Columbia Ministry of Agriculture.

The actual environmental impact generated by the wine manufacturers is listed by FSA Consulting 2006 as illustrated in Table 2.0.

Following a positive example derived from several matured wine industries around the world, the WCO initiated in 2007 the launch of a "proactive plan to promote ongoing improvement for wineries as it pertains to environmental sustainability" (WCO 2008)

called Sustainable Winemaking Ontario. Phase 1 of this plan involved identification of specific practices related to water and wastewater management, solid waste management, material handling, energy efficiency, integrated pest management, industry standards and expansions and renovations (WCO 2008). Phase 2 of this program will allow certification for the participating members. The certification process is identifying the winery as a proactive environmentally sustainable organization with established practices and a continuous commitment to environmental stewardship.

In light of the fact that the wine industry in Ontario is relatively new (most of the developments taking place after 1990), and the concept of environmental sustainability is rapidly entering consumers' consciousness, at the time of the study, the industry is dealing with major transformations in its environmental practices. In addition to an increased consumer awareness and preference towards "green products", pressures from financial institutions (emergence of "green funds "for investment trusts) indicate a growing importance of ethical investment. In other words, private investors would look for the opportunity to invest in companies that have been screened for their environmental impact (Roarty 1997).

Emission to Air due to Fermentation	*Emission to Air due Fugitive Sources*	*Emission to Air due to Fuel combustion*	*Emissions to Water*		*Emissions to Land*
o Ethanol (largest emission	Screening of red wine	o Carbon monoxide (CO)	Emissions of substances to water can be categorized as discharges to:		On-site emissions of substances to land include solid wastes; slurries; sediments; spills and leaks; and storage and distribution of liquids that may contain listed substances. These emission sources can be broadly categorized as:
o Acetaldehyde	Pressing	o Sulfur dioxide (SO2)	o surface waters (e.g. lakes, rivers, dams, and estuaries);		o emissions from surface impoundment of liquids and slurries; and
o Methanol	Ageing in oak cooperage	o Total VOC's	o coastal or marine waters		o unintentional leaks and spills that are not contained and recovered.
o Hydrogen sulfide	Bottling process	o Particulate matter (PM10)	o stormwater.		Irrigation of wastewater is a common source of emissions of NPI-listed substances to land."
Total Volatile Organic Compounds (Total VOC's)	Preservation agents	o Oxides of nitrogen (NOx)			
o Ethyl acetate	o Ethanol				
	o Sulphur dioxide				

Table 2.0 Summary of Environmental Impact (source: FSA Consulting 2006)

Wineries tend to be simple organizations, with low sunk costs, able to distribute their products through well established local networks (LCBO in Canada) or via own wine boutiques opened and operated on the premises. The operating simplicity is related to the fact that technical advancements in winemaking activities are relatively scarce due to a cultural constraint that promotes a traditional model of quality (Delacroix and Swaminathan 1991).

While some wineries are pioneering major environmental initiatives (Flat Rock Cellars: geothermal systems, East Dell Estates: bio-filter system for wastewater, Southbrook Vineyards: biodynamic practices etc) (Wright et al. 2009), others are reluctant to alter their existing processes for an intangible, long-term potential gain. In other words, while the reactive firms (reluctant in altering existing practices) are still committed to old systems, the proactive ones (eager to embrace new practices) see and seize the opportunity created by the environmental awareness to increase sales of "green" products and anticipate changes in the environmental legislation by taking initiatives in redesigning products and technologies (Roarty 1997). In light of the environmental practices recommended by the Wine Council of Ontario, a two phase program is in place to certify organizations and recognize their environmental stewardship. As a result of low participation, "the objective for the coming year will be to increase the number of participating wineries" (WCO 2009).
It is also interesting to add that, while at the high corporate level all the wineries agree with the benefits of environmental stewardship, few are actually implementing them at the operational level. This type of superficial adoption was also confirmed by Delacroix and Swaminathan (1991) in the Californian wine industry. Their research found that cosmetic and speculative changes will occur but they are most unlikely to touch the technical core of the wine operation.

Considering that Ontario grape and wine industry's recommended environmental policies are not mandatory, with no assigned regulatory body in place to ensure and impose and monitor compliance, understanding pro active environmental responsiveness at the operational level (winery operations) requires a comprehensive review of the main bodies of literature that analyse the triggers of a pro environmental response.

2.3 Determinants of Environmental response

The environmental literature has a vast array of studies that identify the determinants of organizational response. Bowen 2000 distinguishes between two types of environmental approach: corporate environmental strategy and specific environmental initiative implementation at the operational level. The high level, corporate environmental policies adaptation was related to triggers such as transparency (Bansal 1996) and visibility (Sharma 1999, Bowen 2000), resources (Klassen 1997), risk propensity (Sharma and Nguan 1999) and stakeholder pressure (Henrique and Sadorsky 1999; Buysse and Verbeke 2003) while King 2000 observed that actual changes and implementations at the operational level (punctuated change) occur later in an incremental manner as a result of "progressive development of capabilities within the firm". Concurring with King's (2000) results, in a longitudinal study conducted by Delacroix and Swaminathan (1991) when investigating organizational change in Californian wine industry, they concluded: "Wineries do not respond to environmental conditions through changes that might imperil their internal structures" (p. 632). The actual implementation of environmental policies would be determined by the organizational slack (as capabilities/resources) (Bowen 2000; Sharma 2000) and managerial views related to environmental impact and assessed importance (Sharma and Nguan 1999; Sharma 1997; 2000, Klassen 1997; Ketola 1997)

The pro environmental behavioural literature classifies the factors associated with proactive environmentalism as situational factors: economic constraints, social pressures and opportunities (Hines, Hungergord and Tomera 1987) and locus of control, attitudes and values (Hines et al. 1987; Kollmuss and Agyeman 2002; Cleveland, Kalamas and Laroche 2005). At least 80% of the motives for pro-environmental and non-environmental behaviour seem to be situational factors and internal factors" (Fliegenschnee & Scheladovsky 1998 as cited by Kollmuss and Agyeman 2002, p. 250).

A different categorization involves external factors: institutional, economic and social/cultural factors and internal factors such as motivations, knowledge and values/attitudes (Chawla 1998; Kaiser et al. 1999; Kolmuss and Agyeman 2002).

Blake (1999)'s study of "value-action gap" identifies three barriers to pro environmental action: individuality, responsibility and practicality. Expanding from an individual to an

organizational perspective, the individual barriers will point towards organizational attitudes and values; responsibility would suggest organizational locus of control while practicality would reflect social and institutional constraints such as lack of time, money and information. His study lacks in identifying the impact of social factors such as family (stakeholders by expansion) and community (industry) as well as culture.

Using a similar approach, Tanner (1999) examined the constraints to environmental behaviour and classified them as subjective (sense of responsibility) and objective (socio-demographic variables such as income, residence etc). The study used multiple regression analysis, while examining the driving frequency of Swiss adult drivers, and found that subjective constraints were significant in explaining variance in driving behaviour seconded by the objective constraints.

Another important study was conducted by Marshall, Cordano and Silverman (2005) in the US wine industry and found that managerial attitudes and norms, employee welfare, cost savings, regulations and competitive pressures are strong drivers of pro environmental behaviour. By employing institutional theory and a qualitative research method the authors concluded that "the stage of environmental transformation in an industry impacts the relevance and importance of these drivers" (p.12). Another important finding was that institutional factors, defined as local networks (associations, suppliers, customers) and regulations (pre-emption of future regulations and compliance with current regulations) also differ in relative importance. While consumer demand and avoiding future regulation ranked as highly important, community pressure and existing regulations were not considered critical. The study used the TRA (Theory of Reasoned Action) as a framework and did not consider ability, locus of control as drivers for pro-environmental behaviour.

A more recent study by Wright et al. (2009) presented at Bacchus conference in France found that environmental practices are driven by three important considerations, business performance, regulation, and personal perspectives and moderated by two others – organizational slack and age. Conducting interviews with proactive wineries in Niagara, Ontario, the authors emphasise the importance of determining a motivational framework that would allow understanding of an individual's "real reason" in adopting a proactive environmental practice at the operational level.

The emerging importance of social pressures coming from educated consumers that prefer products that have elevated standards of environmental protection had been captured by an ever increasing marketing literature. 'Companies are becoming proactive in their management of environmental problems and are beginning to exploit the commercial opportunities that arise from raising environmental standards" (Roarty 1997, p. 244). This precipitating event acts as a factor that could initiate an environmental response. The impact of external pressures is also emphasized by institutional theory. As Prakash 2001 (p. 291) lays it: "organization's policies reflect external pressures for legitimacy". In conjunction, stakeholder theory highlights that policy design is based on preferences dictated by a multitude of stakeholders.

Since implementing an environmental practice involves modification to the existing, established processes, the organizations need to adopt an innovative, entrepreneurial behaviour. Organizational change theory predicts that new environmental conditions that are assumed to impact the organization's future will trigger a resistance to change response. The corporations will attempt to preserve the "status quo" by creating a buffer between themselves and the outside world (King 2000). As a result of an environmental change that is not regulated, and is still voluntary, the corporations could choose to delay the response and adopt more of a low level incremental change that would alter the structure and ultimately the form of the organization (Mylonadis 1993). Other factors responsible for organizational resistance to change are: confidence in ability to perform, level of understanding and assessment of situation as well as the tendency of protecting existing social relationships (Ford, Ford and McNamara. 2002). In Ford's et al. (2002) words: "Successfully dealing with resistance, therefore, ultimately depends on an ability to accurately represent and describe the source of resistance and to choose and implement strategies appropriate for addressing and overcoming that source" (p.116). Using a constructivist approach, Ford et al. proposes that individuals construct realities in different manners, therefore, this socially constructed reality would provide the context in which people and organizations act and interact and as such "resistance to change" will take different forms for different individuals (organizations).
Piderit (2000) proposes a different approach: a multidimensional view of organizational response to change by employing concepts of emotion, cognition and intention. Accordingly, a negative assessment on all three dimensions will trigger a "resistance to change" while a positive assessment triggers a "support for change".

According to strategic choice theory, a voluntary environment practice will employ a wide range of organizational and managerial choice directed at reducing the environmental impact of operations. Creative solutions and innovative technologies need to be adapted to the existing ossified organizational structures, indicating a central role on managerial interpretations in adopting an environmental policy (Sharma 2000; Sharma, Pablo and Vredenburg 1999). Prakash (2001) hypothesises that the extent of the organizational change required will affect the level of opposition; the more significant change will trigger a higher level of resistance.

The entrepreneurship literature also analyses the major determinants of a proactive operational response. The most defining factors are prior experience/attitude/motivations, feasibility as a combination of locus of control and controllability and desirability as a managerial view of an emerging potential opportunity that would trigger a propensity to act (Krueger 1993, 2000; Shapero 1982).

The same factors are outlined by the strategic planning literature in particular Strategic Issue Diagnosis (SID). Sharma's (2000) research on SID combined with environmental corporate strategy emphasizes the impact of managerial interpretations of environmental issue as an opportunity in conjunction with the organizations resources (organizational slack) as triggers of proactive environmental response. His model does not account for any external influences that could precipitate action regardless of internal organizational views.

Dutton and collaborators (1987, 1991, and 1993) work features the main definition of issue diagnosis and its triggers: feasibility, desirability and urgency as a combination of payoff, time pressures, visibility and managerial responsibilities. The strategic issue diagnosis process clarifies the strategic adaptation process by specifying the actual assessments that decision makers undertake in the anticipatory phase (Dutton and Duncan 1987). It argues that diagnosis and further behaviour is derived from two factors: perceived feasibility (combining perceived desirability and perceived capability) and perceived urgency (combining payoff, time pressures, visibility and management responsibility) (Dutton and Duncan 1987)

Social entrepreneurship literature also emphasises the combination between positive social and financial outcomes as triggers of perceived desirability and as such a more positive outlook towards intentional environmental sustainability (Krueger et al. 2005).

Marketing literature emphasises that companies would respond to environmental requirements (beyond compliance) in order to reap first-mover advantages (Prakash 2001, Porter 1998).

Zajac, Kraaatz and Bresser (2000) contained within their Dynamic Model of Strategic Fit elements of desirability of change (including magnitude, timing and direction), environmental contingencies (similar to external/social influences) and organizational internal contingencies as determinants of strategic change and organizational performance. Okumus (2001) lists ten key implementation variables: strategy, environmental uncertainty, organizational structure, culture, operational planning, communication, resources, people, control and outcome.

Without being exhaustive, the above listing of factors identified as drivers of pro environmental behaviour by different, yet compatible bodies of literature, could be summarised as follows in Table 2.1.

Discipline	Outcome	Manager	Desirability	Feasibility	Timelines	Social pressure	Knowledge
	Payoff	Views, beliefs					
Organizational change/	X	X		X	X	X	X
Pro-environmental behaviour	X	X	X	X		X	X
Environmental strategy		X		X			
Strategy implementation	X	X	X	X		X	X
Entrepreneurship	X	X	X	X	X		
SID		X	X	X		X	
Change management		X		X		X	
Institutional theory						X	
Strategic choice		X		X			
Social entrepreneurship			X			X	
Marketing	X						

Table 2.1 Summary of enviromental triggers

It transpires that there is a strong agreement between different disciplines that managerial views, beliefs, attitudes, experience and motivations as well as feasibility and desirability play a critical role in the pro environmental behaviour. Second in importance, yet still critical, is the social/external pressures and outcomes. Barr (2003) argues that environmental action is open to a range of influences focusing especially on environmental values, situational characteristics and psychological variables.

As such understanding managerial cognition is crucial in assessing the essence of an environmental policy and its evolution (Julian and Ofori-Dankwa 2007; Wright et al. 2009). The next section will review cognitive psychology and its impact on the intent to implement environmental practices at the operational level.

2.4 Cognitive psychology

Back in 1960 Anderson (p 68-78) remindes us that mind has three kinds of characteristics: cognition, conation and affect. Cognition refers to ideas and concepts, conation to the mind's ability to strive for something and affect refers to mind as activities or impulses of emotional character.

Sarasvathy, Simon and Lave 1998 differentiated three interrelated levels of cognitive phenomena: semantic, symbolic and neurological. At the semantic level, the textbooks of cognitive psychology identify four sub domains: perception, decision making, knowledge representation and learning and cognitive development. The symbolic level deals with deeper cognitive structures that use causal maps, schemata to understand how we categorize incoming information and direct action accordingly. The neurological level seeks to understand the actual neurological connection in the brain and its impact on action.

The perception, beliefs, attitudes intents have been identified by the cognition research as part of the semantic level of cognition or at the surface of our thinking (same approach as Anderson's ideas and concepts)

Perception is defined as the ability to apprehend reality through multiple perceptual lenses. Beliefs and attitudes structures refer to individual perceptions regarding performance of behaviour (Ajzen 1991) and are antecedents of intentions. The key beliefs and attitudes are associated with the initiation of a goal-directed behaviour (Krueger 2003). The intention is the state prior to executing behaviour (Krueger 2003; Ajzen 2002).

Anderson's conationalism directs attention towards the goal-striving human capacity. "The intention to archive a certain goal is an immediate determinant of goal achievement" (Brandstatter , Lengfelder, Golwitzer 2001, p. 947). As such, the intent becomes central to goal striving capacity. Gollwitzer (1999) distinguishes between goal intention and goal implementation. While goal intention establishes the individual commitment (I intend to lose 30lb), goal implementation takes the goal intent to the next level and launches specific actions (I'll go to the gym three times a week). As such the implementation intention will initiate the specific implementation behaviour.

The affective domain attaches specific emotions and feelings with the mental judgement and processing. Generally two affective influences have emerged: integral and incidental. The integral affect documents the subjective emotional experiences relevant to the choice at hand, while the incidental affect looks at the unrelated emotional experiences that would indirectly affect the choice or decision at hand (Mellers et al. 1997; Schwarz and Clore 1996; Schwarz 2000). Another approach to understanding the emotional charge on the decision making process used a valence-based approach by contrasting negative and positive feelings on judgement. "Hence, negative states may signal that the current situation is problematic and may elicit a processing style that pays attention to the specifics. In contrast a positive affective state may signal a benign environment that allows us to rely on our usual routines and pre-existing knowledge structures." (Schwarz 2000, p 435). The relationship between emotion and rationality was described by Ashforth and Humphrey (1995 p. 99), as "interpenetrated". In other words, emotion and rationality are not mutually exclusive. Georg and Fussel (2000) also point out that the decision making process is imbued with emotional subtexts that cannot be separated from cognition.

Simon (1955), in his behavioural model of rational choice connects the aspiration level (which defines a satisfactory alternative: easy to discover satisfactory alternatives results in an elevated aspiration level while difficult to find satisfactory alternatives generates a low aspiration level) with the system's previous history and trials. He points out that the organism posses a whole hierarchy of rational mechanisms subjected to dynamic adjustment based on the individual computing capacity and the environment of choice. Sense-making literature also emphasises that past experience is embedded with the present experience to produce inventions and interpretations of reality (Wheick 1995).

In the environmental psychology literature, Hinds and Sparks (2008), found that affective connection is a significant independent predictor of intentions to engage with the natural environment. The SID literature introduced the concept of automatic diagnosis as a result of a pre-existing issue categorization in the mind of the decision makers. The categorization process that is based on the past encounters, existing experience (automatic diagnosis) would activate a limited cognitive effort, while an active diagnosis would be intentional and conscious employing a larger amount of cognition (Dutton 1993). Another rising factor charged with emotional content is defined by ethical

reasoning theory as moral intensity. While Jones (1991) defined the six attributes of moral intensity (magnitude of consequence, social consensus, probability of effect, temporal immediacy, proximity and level of effort) as independent of the decision makers' perceptions, Lambert (2000) integrates the moral intensity into the SID model as a key element in shaping organizational commitment.

In the psychology of personal construct, Kelly (1963) states that a person anticipates events by construing (placing an interpretation) their replications. "Like a musician, he must phrase his experience in order to make sense of it (p. 52); once events have been given their beginnings and endings and their similarities and contrast construed, it becomes feasible to try to predict them. "Kelly (1963, p. 52-53). The experience corollary established that experience is made up of the successive construing of events and, in Kelly's words: "Man gradually discovered that he could lay a sight on the future through the experience of the past" (p. 75). The same concept is reflected by Wheick (1995, p. 14) when stipulating that people are engaged in constructing filtering and creating facticity in order to establish and maintain identity. These identities are defined and re-defined as a result of social encounters and on-going organizational events.

Georg and Fussel (2000), analysed the "greening" (environmental reporting or green accounting) of a public hospital in Denmark and concluded that the greening process displays both cognitive and ethical consciousness but also emotional subtexts reflected by anger, shame and embarrassment when considering the environmental consequences resulting from excessive use of resources and materials.

Summarizing all the above we can safely deduce that there is an active interplay that takes place in the mind of the decision maker that combines the prior experience and construed emotional affiliation to create beliefs and attitudes that will activate an *intent* as a predecessor of goal oriented behaviour. Therefore, in order to understand the implementation of a proactive environmental policy, we will be looking into the determinants of intention to implement as a strong indicator and predictor of subsequent actual act of implementation (Krueger 2003).

2.5 Theoretical Background

2.5.1 Theory of Planned Behaviour (TPB) and relevant studies

Ajzen's planned behaviour model came as an extension of the theory of reasoned action (TRA)(Ajzen and Fishbein 1975) and states that intentions are a combined result of behavioural attitudes (positive or negative evaluation of the act of performing the behaviour), subjective norms (or social pressures) and perceived behavioural control (perception of ease or difficulty in performing the behaviour). The difference between the theory of reasoned action (TRA) and the theory of planned behaviour (TPB) is reflected by the addition of the last element: behavioural control or perceived control. The behavioural attitude comprises of two elements: expectation of a particular outcome (positive or negative) and evaluation of each expected outcome as desirable or not. The subjective norms also consist of two elements: perceived important external referents' expected behaviour and the internal motivation to comply with this perceived expected behaviour. Lastly, the perceived behavioural control would reflect the estimated impact of important factors on the performance of the behaviour and the perceived individual power in controlling the undermining capacity of these factors. The perceived behavioural control derives from past experience as well as anticipated impediments and obstacles (Ajzen 1991, 1988). In addition to these three determinants, external factors (economic conditions, government regulations) inflict an *indirect* influence on the intent. The three elements: behavioural attitude, subjective norm and perceived behavioural control, will define the *intention/disposition* to perform certain behaviour *directly*. This study analyses *only* these three direct determinants of behavioural intention. The behavioural intention is considered the immediate precursor to an attempt to perform behaviour.

Endorsed by the environmental psychology literature as a sufficient theory, TPB is concerned with predicting behaviour that is reasoned, individuals are aware of consequences and deliberately choose to perform it and as such behaviour is volitional (Bonnes et al. 2003, p. 176-197).

While the TRA has been widely applied to different types of conservation behaviours: recycling (Bagozzi and Dabholkar 1994; Goldenhar and Connell 1993 as cited by Vining and Ebreo 2002) or preserving natural areas (Luzar and Diangne 1999) or water

conservation (Kantola et al. 1983 as cited by Vining and Ebreo 2002), the TPB received less attention, yet it exhibited a greater predictive power due to its inclusion of perceived control as an indirect and direct factor in determining the intent.

Following, are listed important studies using the TPB that incorporated farmer's conservation behaviour, entrepreneurship and innovative adoption behaviours.

By employing TPB, Beedell and Rehman (2000) surveyed 100 Bedfordshire farmers to understand the underlying determinants of farmer's conservation behaviour regarding land use (management of hedges on the farm). By means of Kruskall-Wallis ANOVA tests, the authors found TPB to be a replicable, robust methodology that proved that conservation concerns have penetrated the farmers' thinking. The major contribution of this study relates to the conclusions that perceived social pressures (internal moral obligation) are self-generated and a strong predictor of conservation behaviour. In addition, exposure to formal education, advisory groups and a wider circle of information has a positive impact on the conservative/environmental thinking. The authors also make reference to the comprehensiveness of this method as a complex model in identifying major critical factors, yet very complex in its questionnaire and analytical requirements. This study is particularly important given the fact that the study focused on six particular environmental actions being analysed: hedge management, field margin management, tree planting and management, hedge removal, hedge planting and pesticide use. The participants were divided into three groups: farmer group, conservationist group and FWAG farmers group (Farming and Wildlife Advisory Group as farmers with more qualification education) to order to facilitate comparisons.

A similar design was used by Aragon –Correa (1998) in his study on strategic proactivity and natural environment done by surveying 210 firms operating in Spain. The researcher analysed 14 specific natural environment practices (preventive and corrective) and group them into three approaches: information and education, traditional/regulated correction and modern/voluntary prevention. The participants were grouped in five categories: environmental excellence, leading edge, compliance, compliance-plus and non-compliance. In contrast to Beedell and Rehman's (2000), Aragon-Correa (1998) findings indicate that high level of information and education will *not* necessarily generate an "advanced posture" towards natural environment.

Tutkun et al. (2006) used TPB with structural equation modeling to explain the conversion to organic farming of Swiss farmers and concluded TPB has an adequate goodness-to-fit to the data and as such, is an appropriate model for understanding farmer behaviour.

Krueger's work (1993, p. 5) is prominent in analysing entrepreneurial intentions using TPB. He found intentional models as "parsimonious and robust framework for pursuing a better understanding of entrepreneurial process". His study analysed the factors underlying the intent to start a new business and found that prior entrepreneurial exposure influences intention through perceptions of feasibility and desirability. The entrepreneurial motivation was also analysed by Segal et al. (2005) (he used Krueger model that included feasibility under the category of perceived behavioural control). His improved model involves an element of tolerance to risk in addition to Krueger's and Shapero's entrepreneurial models.

Dutton's work on "momentum for change" argues that diagnosis and further behaviour is derived from two factors: perceived feasibility (combining perceived desirability and perceived capability) and perceived urgency (combining payoff, time pressures, visibility and management responsibility) (Dutton and Duncan, 1987). Shapero's model of entrepreneurial intentions suggests that intentionality is a combined effect of perceived desirability and perceived feasibility both moderated by propensity to act as the volitional component of intention (Krueger 1993). As a measure of proactivness, the propensity to act is related to perceived feasibility (locus of control) (Krueger 1993).

The intention to adopt technological innovations was analysed by Tabak and Barr (1998). Their study's purpose was to explore the relationship between innovation interpretation and intention to adopt the innovations, in particular the attributes associated with intent. The authors sent 4625 questionnaires to top executives of 1181 hospitals and found that attributes such as controllable, compatible, high advantage, low risk had a significant positive relationship with the intention to adopt innovations. The attributes were categorized as either functional for future performance or dysfunctional. They concluded that there are a number of intervening factors that would influence intent such as top management team dynamics, patterns of power and politics etc. The authors accentuated the need to explore sets of constructs that affect the perceptual, interpretive and decision making processes which *is* the purpose of this study.

In order to understand the factors that affect intent, Ajzen recommends that statements about salient beliefs should be elicited from the respondents themselves or in a pilot study from a sample of respondents' representatives of the population. Ajzen (1991) recognizes that additional factors will affect the intent yet, the broad categories: attitudes, social norms and perceived control will be sufficient to include these factors. In addition external factors, over which the business operators don't have control (economic conditions, soil erosion, economic facts such as demand and supply) will influence the intent indirectly.

Therefore let us explore what are the factors that the literature identifies as the main components of intent categories (attitudes, subjective norm and perceived control)

Attitudes

Psychological literature defines attitude as a general evaluative reaction towards an issue and behavioural tendencies as referring to the ways attitudes are linked to behaviour (Bonnes et al. 2003, p. 176-197). "Attitudes are enduring systems of positive or negative evaluations, emotional feelings and pro or con actions tendencies with respect to social objects"(Greenwald and Banaji 1995, p. 5-6)

Ajzen (1991) defines attitude as a person's salient beliefs towards performing behaviour. He strongly advises that general attitudes are not an appropriate measure for a particular behaviour, therefore, the analysis should focus on specific behaviours relevant to the study in process. "Attitudes don't determine the behaviour directly, they influence behavioural intentions that in turn shape our actions" (Kollmuss and Agyeman 2002 p. 242). Greenwald and Banaji (1995) also established that attitudes have predictive validity only in situations in which they are strongly activated and the individual perceives a link between attitude and behaviour.

Personal values

To understand attitudes towards an environmental behaviour the literature identified *personal values* as important determinants of attitudes. Personal values are intangible and born from reason, morals and personal judgements. They tend to be permanent and difficult to change. A more complete definition is given by Kelly (1963 p. 9) when he defines constructs as "transparent patterns or templates which men creates and attempts to fit over the realities of which the world is composed. They are what enable man… to

chart a course of behaviour explicitly formulated or implicitly acted out. It may take a major act of psychotherapy or experience to let him to adjust his construction system to the point where the new and more precise construct can be incorporated". Accordingly, the core constructs relate to the individual maintenance of his/herself are engrained in the person's identity and are resistant to change. Other constructs convey the social values obtained and modified as a result of social interaction displaying situational elements in the representation of self.

The different dimensions of personal values related to environmental behaviour have been investigated by many researchers. Stern and Dietz (1994) proposed three environmental sets of values: egoistic (personal needs), social altruistic and biospheric to support environmental protection. Following a two study process that analysed the relationships between values (beliefs), environmental attitudes and behavioural intentions, the authors showed significant relationship between behavioural intentions and biospheric-altruist and egoistic values. Their study reflects a tendency of egoistic orientation as having priority before social and biospheric concern. With other words, until the personal needs are met, an individual will concern him/herself with neither social nor any other non-human issues. The same values were investigated by Schultz (2001) in a three stage study and provided strong evidence in support of the existence of egoistic, altruistic and biospheric values as determinants of environmental attitudes.

Goals

Another factor affecting attitudes is goals. Goals are known as objectives, aspirations that change over time as a result of internal or external pressures (family or career pressures, personal aspirations etc.).

In a recent study, Siegwart (2007) proposes a goal-framing theory that distinguishes between normative, gain and hedonic goals as dominant in influencing environmental behaviour. The article suggests that normative goals are significant triggers of pro-environmental behaviour, while gain and hedonic goals might not necessarily trigger a pro-environmental behaviour.

Gollwitzer and Moskowitz (1996) consider that goals are desired states toward people aspire and once they obtained it, they'll experience a sense of coherence with the world which would conform to their beliefs, wishes, values and needs. If the goals have a

positive connotation, they will generate an approach strategy, while goals with a negative outcome would be subject to avoidance strategy. Gollwitzer (1999) defines implementation intention as an individual's commitment to perform a certain goal-directed behaviour. As such, he finds that only a critical goal-intention would be the precondition of implementation intention.

Motivation

The environmental psychology literature defines *intrinsic motivation* as a strong indicator of behaviour. " Intrinsically motivated people derive satisfaction from performing the behaviour itself". Self-determination theory distinguishes between the intrinsic, extrinsic and amotivation as motives underlying performance of desirable behaviour (Vinning et al. 2002, p. 541-558). On another hand, Kollmuss and Agyenmann (2002) put emphasis on primary motives and selective motives and hypothesises that selective motives revolving around one's own needs will override primary motives, such as pro environmental behaviour with social and altruistic outcomes. As he exemplifies, I would rather drive, than use alternative transportation, because is comfortable for me.

The factors mentioned above deal directly with the cognitive aspect of behaviour. The affective aspect or emotional, was emphasized by Kaiser, Wolfing and Fuhrer. (1999). Their study found that emotional affinity to nature is a significant motivator for conservation behaviour. Affective connection as a significant independent predictor of intentions to engage with the natural environment was also indentified by Hinds and Sparks (2007). In this study the authors used TPB as a framework of analysis in understanding the impact of affective connection and environmental identity with nature in rural and urban background participants (social science students). Their findings concur with Kaiser at all (1999) regarding the importance of the measures of affective intent and also suggest that past experience with nature would predict positive emotional affinity and as such greater intentions to engage with the nature.

Ryan et al. (2003, p. 19) investigated the adoption of conservation practices along mid-western watershed in Michigan and found that "farmers are intrinsically motivated to practice conservation by such factors as their attachment to their land and their desire to practice good stewardship".

Environmental awareness/Past experience

A factor that combines both cognitive and affective domains is environmental awareness. While the cognitive part deals with the individual's understanding of environmental degradation (erosion, ecological destruction), the emotional (affective) part is related to environmental knowledge as derived from prior exposure to environmental issues and from personal interest. According to Crawla (1998), environmental sensitivity: is a combination of factors related to childhood experiences in nature, experiences of pro-environmental destruction, pro-environmental values held by the family, pro-environmental organizations, role models and education. Krueger (1993) used Shapero's intentional model and correlation analysis to demonstrate that prior experience (as applied to entrepreneurship) will indirectly influence entrepreneurial intention.

The domain of psychodynamics field confirms that thinking and behaviour is integrated in past events and intricately interwoven with an individual's affective experience (Moore and Fine 1990, p 123). Kelly 1963's experience corollary notes that experience is created through successive replications of events, and as such, events could be anticipated: " Man gradually discovered that he could lay a sight on the future through the experience of the past " (p. 75). His (Kelly 1963) construction corollary specifies that the anticipation of events is based on construing replications of past events. In his words: " What is predicted is not that tomorrow will be a duplicate of today, but that there are replicative aspects to tomorrow's events that may be safely predicted" (p. 53)

The implicit social cognition theory is based on the view that past experience will affect judgement in a manner not introspectively known by the individual. With other words the effect of prior events will affect the response to a current issue (Greenwald and Banaji 1995). Hochschild (1979, 1983, p. 33), introduced the concept of emotional labour and distinguishes between "surface acting" (automatic display of behaviour) and "deep acting" as a purposeful manipulation of one's feelings. Mirroring the concept, in the business literature, Dutton (1993) introduces the concept of automatic diagnosis as the activation of already established issue categories, built on prior similar experiences in the mind of the decision-makers. Accordingly, an automatic interpretation will involve limited cognitive effort, while an active interpretation will be intentional, done consciously by integrating a larger amount of information search and analysis.

Interpretation

It is worth noting that to understand behaviour we have to understand two aspects of behaviour: the mental process (cognitive and affective) of the individual and the type of issue at hand. Different issues will trigger different reactions propelling diverse sets of cognitive maps (lenses to view the issue) with different meanings being attached to that same issue. According to the attribution theory, the response to a social issue is not based on the actual stimuli received, but on what we (the individuals or the organizations) think that cause them (Hunt 2007, p. 493-497). It follows that the interpretations of issues and potential outcomes is highly subjective. The meanings created by individuals or collectively, by organizations, would create the "momentum for change" for further adaptation, as explained by Dutton and Duncan (1987). The interpretation and judgement, filtered through a personal lens, would initiate the categorization of an issue as either an opportunity or a threat.

Dutton's and collaborators' work on Strategic Issue Diagnosis (SID) revolve around the concept of threat and opportunity and its influence on organizational attitude and strategy. An issue perceived as an opportunity will be associated with perceptions of potential gain and successful resolution, with other words, positive outcomes, and will create a positive attitude towards behaviour and generate ulterior action. In contrast, a threat will have a negative connotation (negative outcomes) and as such will activate a negative attitude and an obstruction (resistance) to behaviour and ulterior action. Accordingly, gain and controllability would initiate an opportunity. This categorization coincides with Ajzen's classifications of positive outcome and perceived control as triggers to intentional behaviour.

The SID authors distinguish two aspects to the interpretation process: mental map and organizational resources. The interplay between the two will generate the concept of opportunity/threat. Sharma (2000) employed SID concepts in exploring adoption of environmental strategies in Canadian Oil and Gas Companies. His findings confirm that managers' interpretations of environmental issues as opportunities will prompt a higher likelihood of a voluntary environmental strategy ($t=-3.78$, $p<.01$) and that the concept of opportunity is significantly influenced by the legitimization of environmental issues as part of corporate identity ($t=-4.10$, $p<.01$). The organizational resources and their impact

on behaviour will be discussed under the perceived behavioural control category (section 2.5.3).

Conclusion

Drawing on multiple interdisciplinary subjects and empirical evidence, this section revealed the main components of "attitudes" as determinants of intent as they apply to environmental issues.

The cognitive factors related to personal values, goals, motivations in conjunction with the affective factors such as emotional affiliation, land stewardship, personal experiences, environmental awareness will engender an evaluation of environmental issues as either positive or negative and as such a positive or negative attitude towards the environmental issue will be developed.

This section also brought strategic literature into play to illustrate the concept of opportunity and threat as the basis of diagnosis process. The concept of opportunity is closely related to Ajzen's concept of positive attitude, and will activate intentional behaviour. Both theories draw on concepts of interpretation and control.

The next section will introduce the subjective norms' determinants as applied to environmental concerns.

Subjective norms

Stern and Dietz (1994) showes that an environmental/conservation behaviour is activated by an individual's altruistic-biospheric values. Schwartz (1977) proposed a norm activation model that relates to the performance of altruistic behaviour. According to this model, altruistic behaviour is activated when there is awareness that a particular behaviour will have consequences and there is a feeling of responsibility for carrying out the behaviour.

Ajzen's (1991) TPB model proposes that subjective norms or social pressures are an important indicator of intentionality to perform behaviour. The subjective norms consist of two elements: perceived important external referents' expected behaviour and the internal motivation to comply with this perceived expected behaviour. In other words, in addition to one's own feeling toward behaviour, the opinions of influential others can alter a person's decision to adopt behaviour. Kelly's (1963) sociality corollary defines

"role" as an "outgoing pattern of behaviour that follows from a person's understanding of how the others who are associated with him in his task think "(p. 97-98). In other words, the individual as a dynamic entity, with a role in a social process, will adjust his/her behaviour based on their own understanding (derived from the person's own constructions) of what the role entails and the attitudes of his associates. (p. 98).Therefore two components come into play: a collective social pressure and an individual self-imposed pressure.

Collective social pressures

The collective perceived social pressure could arise from different sources such as important groups and agencies, media or customers.

It is important to add that social groups will only impact the willingness of individual/organization to engage in a specific behaviour when the group norms and membership is a salient belief for self-conception or strong group-identification is present (Hogg and Terry 1999). Marshall, Cordano and Silverman (2005)'s study on environmentalism in US Wine industry categorized the collective pressures as Institutional drivers consisting of associations, suppliers, community group and customers. While they concluded that institutional environment is an important driver of environmental practices, their study is inconclusive regarding the impact of these network on a proactive environmental practice.

Customer's impact on pro environmental practices in wine industry was analyzed by Wright et al. (2009) to conclude that a competitive environment in conjunction with a "green minded" wine consumer has a significant impact on the adoption on the environmentally conscious practices. They are listing a recent study (Western Farm Press 2008) that reports an increase in Californian reported sustainable farming practices to 80%. In contrast to Wright et al. (2009), Marshall et al. (2005) found that competition, community groups and consumer's pressures will have only secondary influence in environmental initiatives (after employee welfare, environmental values and cost savings).

Hall and Roades (2009) identified subjective norms as mass media and political affiliations and investigated its influence on Grain Farmers' Attitudes toward Organic and Non-Organic Farming. Data were collected through a questionnaire sent to 320 members

of the Ohio Corn Growers Association and the Ohio Wheat Growers Association. The results showed that the respondents did not feel pressure from mass media to adopt organic farming, but they cared about the opinions of their subjective norms, especially family and consumers.

Beedell and Rehman's (2000) study on environmental practices, was very focused with six particular actions being analysed: hedge management, field margin management, tree planting and management, hedge removal, hedge planting and pesticide use. The study divided the participants in three groups: farmer group, conservationist group and FWAG farmers group (Farming and Wildlife Advisory Group as farmers with more qualificational education) to facilitate comparisons. The authors concluded that the FWAG group was influenced more by the important referents than the other groups while exposure to a wider circle of information (education, conservation and advisory groups), would create greater perceived normative pressures than otherwise.

Individual pressures

Moral norms are defined as people's perceptions of what important others think would be moral or immoral for them to do. Manstead (2000, p. 11-30) indicates that moral norms can sometimes account for unique variance in behavioural intentions above and beyond that accounted for by attitudes and subjective norms.

Although moral pressure and subjective norms seems to go together, they are propelled by different factors. While morality, in general is based on cognitive, emotional and social factors, the research in agribusiness indicates a strong connection between morality and emotional affiliation to the land (sense of responsibility) (Tanner 1999; Hinds and Sparks 2007; Ryan et al. 2003). Bamberg and Moser (2007) also found that moral norm is significant independent predictors of intention in addition to attitude (explaining 52% of variance of the intention construct).

Beedell and Rehman's (2000) study suggests that perceived social pressures are self-generated and a strong predictor of conservation behaviour. Other researchers have concluded that morality and altruism are significant predictors and/or moderators of pro environmental behaviour or any communal betterment endeavor (Corraliza & Berenguer 2000; Ewing 2001; Gintis, Bowles, Boyd and Fehr 2003).

In contrast, when examining conservation driving behaviour, Bamberg and Schmid (2003) found that the central variable of the Schwartz model—personal norm—exerted no significant effect either on intention nor on the behaviour.

Another ramification of individual motivation to pro environmental behaviour is the concept of voluntary simplicity which refers to lifestyles engaged in low consumption of natural resources. Although not too much research has been conducted in this area, the evidence indicates relation to conservation behaviour (Vining et al. 2002).

Conclusion

This section reflected the major bodies of literature investigating the subjective norm's impact on intent and subsequent behaviour. Whether taken as a collective pressure or a self-imposed one, the review demonstrates disagreements among the findings. In general, subjective norms are found as less significant in entrepreneurial behaviour literature (Krueger 2000) and more influential in the product consumption (Rah et al. 2004) and the health domain (Finlay et al. 2006).

Since the evidence varies based on the contextual and cultural factors, this study will investigate the impact of subjective norms in a specific context: the wine industry in Ontario (Canada).

The next section will introduce the perceived behavioural control's determinants as applied to environmental concerns.

Perceived behavioural control

The perceived behavioural control is defined as people's perception of the ease or difficulty of performing the behaviour of interest (Ajzen 1991). As an addition to the TRA, the perceived behavioural control involves a crucial element of volitional control: the individual can choose whether or not to perform the behaviour of interest. According to TPB, perceived behavioural control is a function of two elements: control and capabilities (perceived power). The more controlled promoting factors in place, the more favourable the behavioural control. As such, perceived behavioural control will reflect both past experience as well as anticipated impediments (Ajzen 1991)

Similar concepts have been identified by social psychology as: locus of control and self efficacy

Locus of control

Locus of control, as introduced by Julian Rotter in 1950 (he called it crucial attitude), is related to the feelings of control that an individual has over his life. The two components of the concept are internal and external locus of control. High scores on the external locus of control indicates attribution of success or failure to fate or luck, while high scores on internal locus of control considers intelligence, hard work or other personal traits as responsible for success or failure.

Cleveland et al. (2005) applied the concept of environmental locus of control to pro environmental behaviour and proposed that internal locus of control would contain elements of economic motivation and individual conservation efforts while external locus of control will include biosphere-altruism and corporate scepticism. They concluded that these measurements will behave differently based on the type of behaviour under investigation. With other words, recycling behaviour (higher external locus of control with biospheric-altruism as a significant predictor) will score differently from water/energy conservation behaviour (higher internal locus of control). The economic motivation was found to have the most affect on pro-environmental behaviour (10 out of 18 cases). In the same lines, in agribusiness, McNairn and Mitchell (1992) found that the adoption of soil conservation practices reflects a high score on the internal locus of control (farmers are internally motivated), yet the low adoption rate would indicate a perceived high economic risk.

Curtis, Simpson-Housley and Youck (2007) analysed the impact of locus of control on household energy conservation behaviours and found it with a limited predictive significance. From a different perspective (using the attribution theory), Jahromi and Zamani (2008) found that attribution to internal factors (effort and ability account for 78% of variance) and controllable factors has a strong and significant (71%) relationship with wheat yield performance among Iranian farmers.

If follows that locus of control will have different predictive value based on the type of conservation/environmental behaviour investigated and the interplay between the multiple dimensions of environmental locus of control.

Self- Efficacy

Ajzen (2002) elucidates self-efficacy as a component of TPB. Self efficacy reflects beliefs regarding one's capacity to execute and deal with different situations. Self efficacy beliefs could influence choices of activities preparation and even emotional reactions (Mone 1994; Ajzen 1991). " People with higher self-efficacy generally set higher goals, persist as tasks longer and perform better than those with low self-efficacy" (Mone 1994, p. 285). The concept is confirmed by cognitive consistency theory which states that people will archive outcomes consistent with their self-concepts (Korman 1971 as cited by Pierce, Gardner, Cummings, Dunham 1989).

Self-consistency motivational theory considers self-efficacy as a direct reflection of previous experiences and central to explaining motivations, attitudes and behaviours. (Pierce, Gardner, Cummings, Dunham 1989). Self-efficacy was found to explain variance in intentions more significantly than attitudes and subjective norms (Cheung and Chan 2000 as cited by Ajzen 2002)

Krueger and Brazal 1994 suggest perceived self-efficacy as an effective instrument of entrepreneurial behaviour while Hostanger et al. (1998) advocate that efficacy (in addition to ability, motivation and desirability) will affect the performance in the task of recognizing new environmental opportunities. In addition, Barr (2003) considers that citizenship and responsible environmental behaviour will be affected by perceived personal self-efficacy and Perry, Marbella and Layde (2001) found a positive relationship between self-efficacy and intention of using personal protective gear when administering farm pesticides. Hence, there is an agreement in the literature regarding the predictive influence that self-efficacy has on behaviour.

Conclusion

This section presented the main elements of the perceived behavioural control concept as specified by the existing relevant literature.

Whether named self-efficacy or locus of control, perceived behavioural control received contradictory ratings in the literature based on the organizational context and issue characteristics.

In the entrepreneurship literature Segal et al. (2005) used the concept of self-efficacy to investigate the motivation on becoming an entrepreneur (sampling 114 undergraduate business students) and found that intention was significantly correlated to self-efficacy (Pearson correlation coefficient of 0.669) and the link between self-efficacy and intentions possessed significant explanatory power (t-statistic=7.116).

Beedell and Rehman (2000) suggest that farmers involved in hedge management felt in control and found the behaviour (hedge management) very neutral (not very easy or very difficult to perform).

Cordano et al. (2000) analysed pollution prevention behaviour in a sample of 295 environmental managers and found that perceived behavioural control to be negatively predictive of behavioural preference.

It is apparent that the impact of perceived behavioural control on the intent it varies from one organization to another. This study will analyse the impact of this variable on the environmental practices in the grape and wine industry in Ontario (Canada).

Another model emerging in business literature and dealing with concepts of feasibility is Strategic Issue Diagnosis (SID). The strategic issue diagnosis process argues that diagnosis and further behaviour is derived from two factors: perceived feasibility (combining perceived desirability and perceived capability) and perceived urgency (combining payoff, time pressures, visibility and management responsibility) (Dutton and Duncan 1987). The next section will present the Strategic Issue Diagnosis (SID)'s rationale and its application in the environmental literature.

2.5.2 Strategic Issue Diagnosis (SID)

Dutton et al. (1983, p. 307) defines strategic issue diagnosis (SID) as "activities and processes by which data and stimuli are translated into focused issues (attention organizing) and the issues explored (acts of interpretation)". The strategic issue diagnosis frames an issue in a particular way based on the assessments that the decision makers make regarding the issue's potential impact on the organization present and future development. SID's focus is on the understanding how data is perceived and interpreted in a specific context considering the particularities generated by organizational context and issue characteristics (time pressures, information etc).

The SID framework portraits three components: inputs, process and output.

At the *input* level, the authors suggest three elements as critical: cognitive maps (concepts and beliefs), political interests and issue characteristics. While the cognitive maps determine the individual interpretation, the political interests motivate the interest and stakes in the process and the issue characteristics will define the field where the interplay between cognitive maps and political interests takes place.

At the *process* level two stages are captured: the individual process and the collective one. The individual process consists of *recursiveness* (repeated revisions of judgement, define and redefine the issue) and *retroductivity* (categorizing issues using both inductive (based on past experience and learning) and deductive (specific judgements and predictions) thinking). At the collective level, *heterarchy* contends with the interaction between different individuals and their respective cognitive maps and political interests and the reinterpretations, negotiations and influences that take place at this time.

The *output* of the diagnosis process consists of assumptions (conditions, attributes assigned to the issue), cause-effect understanding (relational statements that frame the issue in a particular way) and predictive judgements (timing, magnitude and implications of issue).

There is a continuous interplay between the elements in each phase (level). In order to understand the diagnosis process, the authors recommend attention to each level (input, process, output) as critical in addition to the issue/specific factors. It follows that the interpretation issue at an organizational level is highly subjective, created and legitimized in a social context and influenced by organizational beliefs and resources.

Therefore, in order to understand or predict organizational response to an issue three fundamental processes will take place: *triggering mechanism, urgency assessment and feasibility assessment* (Dutton and Duncan 1987). The authors specifically note that the assessment processes happen while the issues are still in an anticipatory phase (in the process of being interpreted and defined).

The triggers of a change could be generated internally (real or anticipated gap analysis, shareholders expectations etc) or externally (stakeholders, government regulation, market demands etc). Once an issue is triggered, organizational attention is activated and an assessment process follows. Urgency assessment portrays the perceived importance of an issue; the greater the urgency, the grater the need to change. In conjunction with the urgency assessment is the visibility assessment (the level of exposure to internal and external important constituencies) that would magnify or not the urgency assessment (increased issue exposure creates pressures to take action). In addition to visibility, attributions of responsibility could increase perceived issue urgency (internal responsibility might trigger a reduction in perceived urgency for change, while external pressures from media would increase the urgency appraisal to a critical level). As a result of urgency assessment, the decision makers will identify the need to initiate change. Low urgency issues will became inactive (no need to initiate change) and no further assessment will take place. High urgency issues will prompt a feasibility assessment. With other words, once the need to action is determined the capability is measured next (Dutton and Duncan 1987).

The feasibility assessment looks after the means (resources: financial, human, technological, time) of resolving the issue and their availability and accessibility. It is proposed that the feasibility assessment will affect the adaptive response of organizations. The interaction between feasibility and urgency assessment to organizational response will be reflected by four categories: no response (low feasibility, low urgency), opportunistic response (high feasibility, low urgency), coping response (high urgency, low feasibility) or reorienting responses (high urgency, high feasibility) (Dutton and Duncan 1987).

According to Dutton and Duncan, the availability of resources could create an illusion of invulnerability which may skew the urgency and magnitude assessment of an issue's feasibility (magnifying perceptions of capability). On the other hand, resource shortage

might increase the perceived need (urgency) to change (without a cushion, each disturbance is magnified, therefore increasing the perceived need for change). Therefore, the level of resources will influence organizational response to change (Dutton and Duncan 1987).

Ginsberg and Venkatraman (1995) applied the feasibility-urgency (FU) framework in testing organizational adaptation to technological change (electronic filing system for tax returns). Based on a survey sent to 1000 businesses (430 data collected), the authors specified the underlying subdivisions of feasibility: issue manageability (means are available and accessible) and understandibility (perception that with some effort, means for solving the issue can be identified). Therefore, they modified the FU frame work to include issue urgency (visibility), manageability and understandibility. While their study confirmed that urgency and feasibility shape response momentum (Dutton and Duncan 1987), the adaptive competencies would be dependent on assessments of understandibility (reflecting the cognitive component of interpretation) and manageability (found to have significant affect on the administrative dimension dealing with new skills and capabilities and organizational commitment). From a different perspective, Georg and Fussel (2000, p.181) found that when thinking about the environment, "resource use and waste was not at the top of manager's minds".

Kuvaas (2002) analysed the relationship between informational contexts and top managers strategic issue interpretation and concluded that higher level of information processing capacity will generate a higher level of perceived control and manageability over the issue. With other words, information availability allows managers to assess their own organizational ability in controlling and managing strategic issues. The study did not support a positive relationship between informational context and overconfidence (illusion of control and manageability) but it did emphasize the cognitive complexity of the interpretation issue.

In the environmental strategy literature, Sharma (2000) used the SID model to investigate the relationship between managerial interpretations of environmental issues and organization's choice of voluntary environmental strategy in the Canadian Oil and Gas industry. Their model allocated issue legitimization, discretionary slack (managerial level resources) and employee performance evaluation to the managerial interpretation as prerequisites to environmental strategy. The author indicates that issue legitimization,

when dealing with environmental issues, as part of corporate identity is crucial in justifying further environmental commitment. The results also show that high managerial discretionary slack increases the perceived controllability associated with unpredictability and risk, with environmental issues emerging as opportunities and as such, with a greater likelihood of adoption ($t=-3.55$, $p<.01$).

Choice between alternatives (preferences for food preparation versus convenience or ready-meals foods) was investigated by Saba et al. (2008) and a new component: "perceived need" was added to understand its impact on the intent to eat convenience foods. Surveying a sample of 768 seniors in eight European countries, the authors concluded that perceived need was the most important factor in determining intention to eat convenience foods in UK, Poland and Portugal. In contrast, perceived control was found as most important in Italy only. This study would deem the "perceived need" as the trigger of urgency to act or propensity to act as defined by SID literature and an equivalent to the concept of understandibility. I suggest that a critical goal-intent (such as long-term sustainability or first-mover gains or establishing a central position) would create a mind-set that would trigger intention implementation upon weighting "perceived need" to implement and feasibility. With other words, I desire to install a geo-thermal system (would like to have it) but there is no need at this time to do it since I can function successfully without it (with a critical goal of short-term gains).

Conclusion

The strategic issue diagnosis process specifies the actual assessments that decision makers undertake in the anticipatory phase of the decision making process (Dutton and Duncan, 1987). Its application in the environmental strategy and its similarities with the TPB literature will be the underlying motive for utilising sections of it (specifically urgency assessment) in the present study.

The entrepreneurship literature surfaced another model with significant implication on intentional behaviour: Shapero's Model of Entrepreneurship. Shapero's model of entrepreneurial intentions exhibits similarities with SID model by suggesting that intentionality is a combined effect of perceived desirability and perceived feasibility both moderated by propensity to act as the volitional component of intention (Krueger 1993). The next section will explore this model's application in this study.

2.5.3 Shapero's Model of Entrepreneurship

Behavioural intentions were examined by the entrepreneurship literature with one prominent model emerging: Shapero model of entrepreneurship. According to the model, intention is dependent on three variables: perceived credibility, perceived desirability and propensity to act.

Perceived credibility, or the belief that there is an opportunity emerging, is propelled by perceived feasibility and desirability plus some propensity to act on the opportunity (Shapero 1982, Krueger 1993). The desirability is defined as personal attractiveness to perform the behaviour while the feasibility reflects the personal capability to perform the behaviour and propensity to act is the disposition to act (volitional component). Shapero considers self-efficacy as proxy for feasibility and locus of control as the closest related to the propensity to act (Shapero 1982).

The impact of prior entrepreneurial exposure on entrepreneurial intentions was examined by Krueger (1993). He tested the Shapero model on a sample of 126 university business students and found that propensity to act correlated significantly with entrepreneurial intentions. Further path analysis showed that the perception of desirability and feasibility were not correlated but independent. While regression results showed that intentions were significantly associated with perceived feasibility, desirability and propensity to act, breadth of experience was positively associated with perceived feasibility only while positiveness of experience was associated with desirability only. The author concludes that propensity to act derives from control beliefs and that intentions formation may be more complicated than the tested model suggests.

Krueger (2000) compared the predictive validity of Ajzen and Shapero-Krueger model (on a sample of 97 business students) using regression analysis and found that perceived feasibility, desirability and propensity to act would predict intentions with an adjusted R^2 of 0.408 ($P<0.0001$)(also cited by Segal et al. 2005).

Segal et al. (2005) modified Shapero's model to include a measure of tolerance for risk (the operationalised propensity to act) in addition to perceived desirability and feasibility. His model's R^2 of 0.528 (tolerance for risk, perceived feasibility and perceived net desirability predicted self-employment predictions) shows a strong explanatory power for entrepreneurial behaviour. The concept of risk (risk aversion) was explored by Krueger

(2000) with a suggestion of applying the utility (satisfaction) theory towards intentions to start a new business and determine if a risk averse attitude, yet an optimistic stance, would reflect in an entrepreneur's utility curves.

It was stated that the adoption process would be an organizational phenomenon not an environmental one (Tabak and Barr, 1998). Since the matter of adopting an environmental practice as part of the operational processes is an organizational issue and requires creativity and entrepreneurial spirit, it was deemed as necessary to understand the triggers of entrepreneurial behaviour and as such to review relevant models in the entrepreneurship literature that are associate with intent . Shapero's model for entrepreneurial behaviour exhibits similarities with Ajzen's TPB and Dutton and collaborators' SID by including elements of feasibility and desirability in addition to propensity to act. The model's application in behavioural studies related to change and entrepreneurial activity makes it relevant to this study.

2.5.4 Other factors affecting adoption

Environmental identity: Hinds and Sparks (2007) found that environmental identity ("the meanings one attributes to himself as they relate to the environment") is a significant predictor of intentions to engage with the natural environment, *in the absence of affective connection.* Environmental identity was found to have both an indirect affect (through attitude) and a direct effect on the intent. Clayton (2003, p 1-24) found a high correlation between environmental identity and self-reported environmental behaviours when analysing energy efficiency.

Age of the organization has been shown to affect the speed of response to change. Delacroix and Swaminathaan (1991) found that older wineries tend to be more conservative and immortal. Confronted with change, these wineries would engage in cosmetic or speculative changes before touching their technological core (structural inertia). From a slightly different perspective, Wright et al. (2009) proposes that the age of the winery leadership will affect the adoption of environmental practices with younger leaders being more proactive.

Reputation was identified by the strategic literature as an important factor in developing corporate image more specifically an intangible element of a corporate strategy. Richard Branson suggested using reputation to develop corporate brand: "Boasting a name synonymous with good repute could therefore, potentially be worth its weight in gold" (Strategic direction 2005, p. 27).

Tal et al. (2006, p. 9) suggests that "individuals are expected to be very concerned with social status and the accumulation of resources, often for the purpose of investing in their offspring and genetic relatives. Gaining and maintaining high social status and accumulating and displaying resources are often synonymous"

Brammer and Pavelin (2004) analyzed the process of building a good reputation and indicate that a good reputation would provide a considerable strategic advantage while responsible behaviour (proactive behaviour) would strengthen this standing. Building on the same views, Russo and Fouts (1997) used resource-based theory and note that reputation is in itself a source of market advantages. They list firms from ARCO to Procter & Gamble generally that credit part of their profits to a reputation for pro-environment corporate behaviour. In their own words: "Once gained, a pro-environment reputation is itself a valuable inimitable resource" (Russo and Fouts, 1997, p. 540). Reputable corporations will receive more media coverage whether the reputation is based on financial performance, product quality or management effectiveness.

Dollinger, Golden and Saxton (1997) investigated the impact of reputation on a decision about proceeding with a strategic alliance. Whilst their study differentiated between three dimensions of reputation: product quality and innovation, management integrity, and financial soundness and their interrelationships, their concluding remarks emphasise the need for an organization to have a proactive strategy to built and promote its visibility and reputation as a means of competitive advantage. The research points out product quality and innovation as the most important element of reputation followed by management integrity and lastly financial soundness.

Gain/Loss: The nature of gain, as a strong determinant of behaviour has been analysed by the business literature. Krueger (2003) found that goal attainment as gain/loss *is a strong predictor* of propensity to act. Kollmuss and Agyenmann (2002) found that pro-environmental behaviours demand the least cost; environmental attitude and low cost

were correlated significantly. These findings also confirm the concept of preferred low level incremental change (lower cost and changes associated with the existing structures) as described by King (2000). In contrast, when analysing 268 farmers in mid-Western Michigan watershed, Ryan et al. (2002) found that economic compensation (gain/loss) is overridden by farmers' attachment to the land. Since the literature takes disparate positions regarding the impact of gain/loss on the pro-environmental behaviour, this study will analyse the gain/loss impact on the intent to implement environmental practices at the operational level in Ontario grape and wine industry.

2.5.5 Research questions, framework of analysis

The literature identified the need to understand managerial cognition as the main driver in promoting and implementing change. Whether they were examined as barriers or drivers to an environmental policy, the factors affecting adoption and implementation gravitate around attitudes, social norms and feasibility assessments. The review shows that there are discrepancies between the scholars regarding the impact of each of the above factors on the intent. Within the agri-business field the investigators showed divergent results: Beedell and Rehman (2000) found that TPB to be an appropriate framework for analysing conservation behaviour among farmers, while Bagozzi and Dabholkar (1994), Goldenhar and Connell (1993) as cited by Vining and Ebreo (2002); Luzar and Diangne (1999) and Kantola et al. (1983) as cited by Vining and Ebreo (2002) found TRA as more relevant (perceived behavioural control not significant). The environmental literature fond that issues related to capabilities and means of adoption in conjunction with risk assessments, cost, complexity and compatibility are more important (Sharma 2000; Vanclay and Lawrence 1994) while the entrepreneurship literature concurs with the feasibility assessments and adds an element of desirability as trigger of intent.

Comparing and contrasting the above models reveal that the concept of feasibility is mirrored by the Ajzen's model as perceived behavioural control or self-efficacy (Ajzen 1987). The desirability suggested by Shapero is derived from the behavioural attitudes that would create a "disposition" to act. The managerial attitudes and the disposition to act or propensity to act is also included in the SID model as organizational beliefs and perceived urgency (Dutton 1997). These models explains that choice will be based on the

most desirable outcome; fact confirmed by Ajzen's attitudes concept. Sharma's (2000) list of response predictors starts with managerial attitudes/beliefs and their interpretations as a trigger of environmental corporate identity followed by discretionary slack (perceived availability of time and resources). He identified the importance of the corporate identity or image as a direct result of internalising the perceived social pressures, social responsibility and legitimization of the environmental issue as an integral part of corporate strategy (Sharma 1999; Bowen 2000). The same concept is reflected by SID:" Organization's identity and image are critical constructs for understanding the relationship between interpretations and actions of an issue over time" (Dutton and Dukerich 1991, p. 520). Ajzan's model of planned behaviour captures the same concepts under the subjective norms category.

From the above analysis it follows that a response decision is best analysed using a model that focuses on process-oriented cognitive constructs covering items related to attitudes, motivations, feasibility and urgency and social norms as predictors of intentions and behaviours. Based on the similarities found between the above theories, this study will draw on the Theory of Planned Behaviour as the most comprehensive paradigm, and evaluate its applicability in understanding and predicting the choice of implementing a voluntary environmental policy, defined as the intention of adopting environmental practices at the operational level. A summary of this model and its components is illustrated in Appendix 2.

Given the uncertainty and variability in the processes involved in a voluntary environmental response, this study's purposes is obtaining identification of and insight into the constructs that make up the attitudes, subjective norms and perceived behavioural control as determinants of intention and as such, triggers of intent and adoption of environmental practices at operational level in the wine industry in Ontario. This study takes a constructivist approach by drawing from Kelly's (1963) theory of personal constructs and considers individuals as dynamic entities with a goal oriented behaviour that creates multiple meanings and experiences in its interactions with the environment.

This research will answer the following questions:

1. What are the constructs and main drivers that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

In Krueger's (1998p. 181) words: "Understanding what inhibits entrepreneurial activity in an organization requires understanding how intentions toward a prospective course of action are constructed". With other words, constructs used by the decision makers in maintaining a sustainable enterprise would trigger identification and adoption of new practices with industry wide repercussions. The idea of construing and its benefits in recognizing how organizations "see" and "make sense" of environmental practices is stressed by Georg and Fussel (2000, p. 176): "taking a constructionist approach allows for bringing the actors, their emotions, interpretations and actions within the organization... for refocusing on greening as an emergent process". These authors also found that, even within the same organization, some environmental practices were perceived as an "embryonic" idea, while other saw them as a natural step towards a sustainable organization.

2. To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intentions to adopt environmental practices at the operational level?

The existing literature found that attitudes significantly influence the behavioural intention (Beedell and Rehman 2000; Krueger 2000, Kalafatis, Pollard, East and Tsogas 1999) while the subjective norm was found as having an insubstantial impact (Krueger 2000). In addition Beedell and Rehman (2000, p. 122) found that" rather than perceiving a social pressure farmers felt a self-generated internal obligation towards carrying out conservation behaviour" implying a morality concept. Lambert (2000) suggested that morality would be an integral part of a model dealing with environmental issues (water consumption). This research investigates Ontario's (Canada) grape and wine industry's perceptions on subjective norms and potential morality. The defining construct between TRA and TRB is the perceived behavioural control concept. While Beedell and Rehman (2000) found perceived behavioural control to be determinant in

understanding farmer's conservation behaviour, Kalafatis, Pollard, East and Tsogas (1999) found this concept (perceived behavioural control) not significant and as such the TRA as a more appropriate model in explaining consumer's intentions to buy environmentally friendly products. These last findings were also validated by Jackson (2007) when analysing wool producer's behavioural determinants of the adoption of forward contracts. There are indications that:"TPB is more appropriate in well established markets that are characterised by clearly formulated behavioural patterns" Kalafatis, Pollard, East and Tsogas (1999, p. 441).

3. What is the magnitude of the gain/loss and reputation constructs and how it affects the decision to implement environmental practices at the operational level?

In addition, goal attainment or gain/loss was identified as a strong predictor to affect the propensity to act (Krueger 1993). Kollmuss and Agyenman (2002) found that pro-environmental behaviours demand the least cost; environmental attitude and low cost were correlated significantly. These findings confirm the concept of low level incremental change described by King (2000). The notion of perceived gain or loss was also highlighted by Goerg and Fussel (2000, p.175):" greening and organizational changes are largely considered in terms of the results associated..." Besides, both Sharma (2000, 1999) and Dutton and Duncan (1987, 1991) acknowledged the importance of reputation/image on the anticipated behaviour. Bowen 2000 concluded that environmental visibility "offers a potentially powerful explanation of the amount of pressure firms experience on environmental issues and the triggers of green organizational response". Goerg and Fussel (2000, p.183) found that adopting environmental practices would allow for reconstruction of identity among the managers: "from being invisible... into being central actors in an emerging strategic field"

4. What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

Krueger (1993, 2000) and Erikson (2001) analysed entrepreneurial intentions and found that a model that includes desirability is a good predictor of behavioural intentions. Desirability was individually associated with positive experiences only. Gollwitzer and

Moskowitz (1996) defines desirability as a "partial-manner favouring pros over cons". The SID model emphasises urgency assessment as a trigger to diagnosis prior to the feasibility assessment. Saba et al. (2008) and Messina et al. (2008) introduced the concept of 'need to adopt' when analysing consumer food preferences and preparation. Surveying eight European countries, Saba et al. (2008, p. 147) concluded that "perceived need "was the most important factor in determining the intention to eat convenience foods in UK, Poland and Portugal". As such, understanding the constructs that influence *the need to adopt* environmental practices would allow policy makers to provide means to address industry specific needs and also the ability to identify which practices should not be mandatory at this time.

Hence, to capture the momentum for change we need to build knowledge on effective organizational strategies and processes to inform policy and practice and explore how environmental practices are adopted in the Canadian (specifically Ontario) context. The study answers a call for research using broad strategic issues (environmental practices) important for organizational development and understanding the effects of interpretation on response (Julian and Ofori-Dankwa 2007; Wright et al. 2009). Given the disparity of research results within the agri-business field, the thesis will answer another call (regarding single industry theory) to build studies involving cross-case analysis of different firms operating within same industry (Ontario wine industry) (Helfat 2000; Sarasvathy 2001). The single industry studies are valuable in offering specific industry facts by building specific industry knowledge and filling research gaps (Baum et al. 2001). Within the Ontario grape and wine industry there is a paucity of research regarding environmental practices adoption with only one study proposed by Wright et al. (2009) in place. From a practical perspective, as a result of the environmental certification process initiated by WCO, this study will offer important information in understanding the regional intentions for a sustainable industry and identifying the practices that the industry deems as unnecessary at this time.

2.6 Chapter Summary

This chapter proceeded with a review of three dominant theories: TPB, SID, Shapero's model of entrepreneurship. Each of these theories identified a number of key variables critical to this study as potential factors to implementation of environmental practices. The next chapter outlines the research strategy and design, its rationale and limitation in addition to data collection and analysis.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Research design and methodology

This chapter explains and justifies the research design adopted in undertaking the data collection, analysis and reporting.

With a focus of gaining a deeper understanding from the key decision makers of their intent of implementation of environmental practices within their operational processes by using the theory of planned behaviour as a background, the research questions are:

1 What are the constructs and main drivers that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

2 To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intentions to adopt environmental practices at the operational level?

3 What is the magnitude of the gain/loss and reputation constructs and how does it affect the decision to implement environmental practices at the operational level?

4 What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

3.1.1 Research paradigm:

In view of these questions, a constructivist approach, multiple case embedded case study design is used to explore the determinants of intention.

The constructivist approach considers meaning as constructed, not discovered. As Crotty (1998) mentioned, this approach invites a "radical spirit of openness" to be employed, which accommodates multiple meanings and a variety of individual experiences. The different meanings of the same phenomena are due to different constructs derived from a variety of experiences. Constructivist psychology investigates how humans create meanings about their world and experiences. Raskin (2002) identified three key constructivist psychologies: personal construct psychology, radical constructivism and social constructionism.

Radical constructivism considers the individual as operating from an encased isolation with language and social interaction allowing for interpersonal communication but ultimately remaining cognitively isolated. In contrast, social constructionism is about relationships and how individuals create meanings as a result of interaction. Language and "identity" (how someone is talked about and treated creates a fluid identity that changes with specific interpersonal relationships and cultural context) are very essential in this socially negotiated reality (Raskin 2002). In Burr's (1995 p.7) words: " the fundamental assumptions of social constructionism have been living in sociology for quite some time". Personality exists not *within* individual but *between* individuals. Accordingly, the type of social interaction defines the individual behaviour towards other people/situations.

Social constructivism on the other hand, has developed as a cognitive science to understand how individuals interpret and make meaning of different issues within a social and cultural setting. The cognitive development process examines the transference of socially shared activities into internalized processes (Palincsar 1998).

In other words, social constructionism (described as a sociological construct) refers to the development of phenomena relative to social context, while social constructivism (described as psychological construct) refers to the individual making meaning within a social context. This study takes a social constructivism approach.

Personal constructivism considers the individual from a holistic perspective as self-construing but also with an active role in the social processes. In other words, the process of construing incorporates both social and individual aspects (Tobin1998). Individuals will form relationships and construe on each other's constructions (sociality) and as such be able to understand one another better. The sociality corollary was defined in section 2.5.1 as the pattern of behaviour that an individual will follow and/or modify based on his/her understanding and prediction on his social environment (Kelly 1963 p. 96). The individual's free choice to control, predict and create meaning is at the heart of Personal Construct Psychology (PCP). Its underlying theory: Personal Construct Theory (PCT).

Founded on constructive alternativism, Personal Construct Theory (PCT) was introduced by George Kelly as a major psychological theory erected at the intersection between conventional philosophy and psychology. In Kelly's words:" As a philosophy it is rooted in the psychological observation of men. As a psychology it is concerned with the philosophical outlooks of individual men "(Kelly1963 p. 16). Constructive alternativism postulates that people conceptualize events in many different ways and new dimensions of meaning are continuously created as a result of re-evaluation of existing constructs (Kelly 1963).

Kelly views the individual as an incipient scientist that creates his own ways or constructs of seeing the world and the events. "As a scientist, a man seeks to predict and control the course of events. The constructs which he formulates are intended to aid him in his predictive efforts" (Kelly 1963, p. 12). In other words, understanding the meanings that individuals create as a result of personal experiences will trigger anticipation and a predictive behaviour.

Constructivism's flexibility in combining both pragmatism and phenomenology bestowed its broad uses in social science and business (Butt 2008). This study's purpose is to understand the cognitive structures (meanings) that decision-makers in the Ontario (Canada) wine industry associate with the implementation of environmental practices at the operational level. Therefore, from a constructivist perspective, the Personal Construct Theory provides a comprehensive paradigm to analyse the subtle transfer and transformation of meaning from the individual to its social environment. As such, this study draws on psychological "meaning making" rather than sociology.

Constructivism is also emphasised by environmental psychology as a broad perspective that connects cognitive, affective and action aspects in a holistic view (Bonnes, Lee, Marinno 2003 p. 14-16). The "transactional-contextual" approach (or grant theory) as the base of environmental psychology, emphasizes the need for a constructivism/ multiple intentionality perspective due to the fact that an individual is a dynamically organized system with goal oriented behaviour directed by the exchange between internal needs and environmental opportunity and therefore "construing" its relationships with the environment will provide a balance between both "natural science" and " human science" perspectives (Bonnes et al. 2003 p. 14-16).

3.1.2 Methodology

The case study design rationale is based on the assumption that this inquiry" investigates a contemporary phenomenon within its real-life context" (Yin 2003). Christie et al. (2000) also states that case studies are applicable when there are particular events that are focused on a situation or context and have specificity. In addition Eisenhardt (1989) specifies that case studies research would capture dynamic situations much better than other methods and Perry (1998) emphasizes the design's ability to reflect change processes in a more descriptive manner.

The case is defined as the intent to implement environmental practices at the operational level; the unit of analysis is the constructs derived from the respondents; the purpose of the case study is to apply and further develop the Theory of Planned Behaviour (in conjunction with Shapero-Krueger model and SID).

The multiple-case design is selected as being more robust than a single-case study allowing replication both literal (predict similar results) and theoretical (predicts contrasting results for predictable reasons) as a measure of reliability (Yin 2003 p. 47). The research design follows Yin recommendation and comprises of three phases: "define and design", "prepare collect and analyze" and "analyses and conclude". The analytical conclusions derived from multiple-cases will allow expanded external generalizability of findings (Yin 2003). In addition, Tsoukas (1989) suggests that an "analytical generalization" or generalization beyond the case context could be obtained if predictable

results occur in a number of cases. The replication process is applied to both proactive and reactive cases to ensure a thorough analysis.

The "define and design" phase is based on development of theory, selection of cases and the design of data collection protocol. This phase is followed by conducting the case studies and writing the individual reports (with particular references to the theoretical propositions) and concluded by a process of cross-case analysis and modification of theory and policy implications (Yin 2003). Figure 3.1 illustrates the replication approach used for this study.

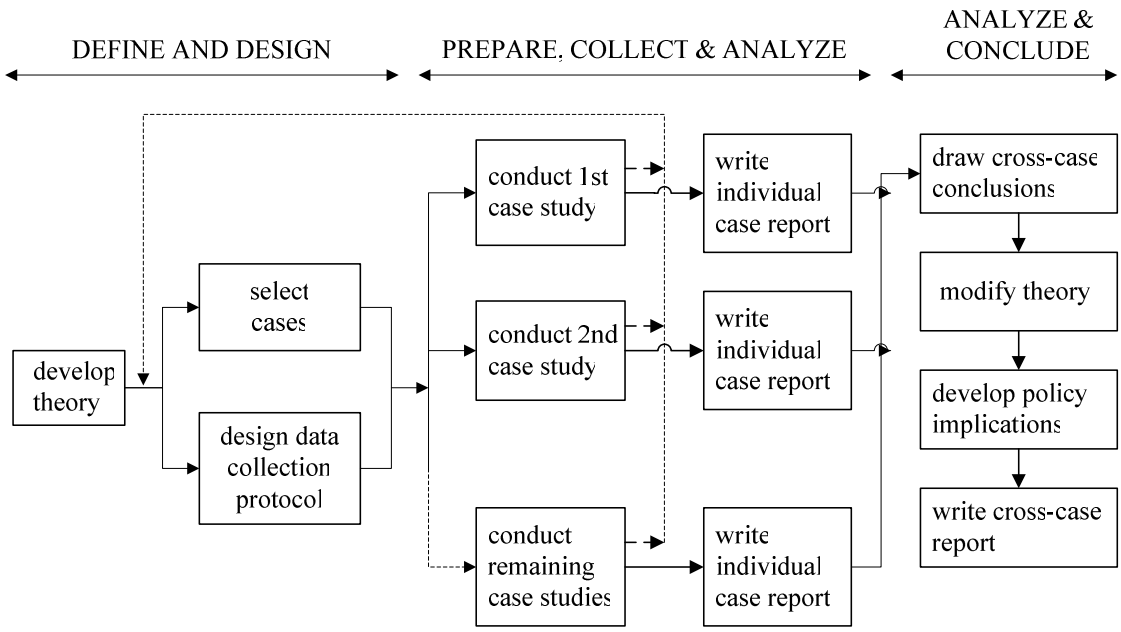

Figure 3.1 Replication Logic – Case Study
Source: Yin 2003, p 50

Theory development

The focus of the research is to gain insight into specific factors that underlie the implementation of environmental practices at the operational level within the wine industry in Ontario. The theory used as a framework to understand and predict the choice of implementing a voluntary environmental policy, defined as the intention of adopting environmental practices at the operational level, is Ajzen's Theory of Planned Behaviour. According to this theory intentions are a combined result of behavioural attitudes (positive or negative evaluation of the act of performing the behaviour), subjective norms (or social pressures) and perceived behavioural control (perception of ease or difficulty in performing the behaviour). These three elements, behavioural attitude, subjective norm and perceived behavioural control, will define the intention/disposition to perform certain behaviour. This behavioural intention is considered the immediate determinant of an attempt to perform behaviour. The paradigm that the theory suggests is highly positivist. The data collection is based on a suggested pilot study that would elicit salient beliefs followed by a questionnaire evaluated using statistical analysis. *There are no standard measures used in testing the Theory of Planned Behaviour.* The operationalisation of the measures is dictated by the context and issue at hand.

Most of the researchers that tested this theory (in conjunction with environmental behaviour) used the recommended positivist approach (survey method with questionnaires as instruments) to conclude if TPB or TRA is more appropriate and establish the relationship between elements (Krueger (1993, 2000) and Erikson (2001), Kalafatis, Pollard, East and Tsogas (1999), Beedell and Rehman (2000), Hinds and Sparks, 2007, Segal et al. 2005). This study argues that, although very popular, a self-administrated questionnaire applied to an environmental issue will be subject to "social desirability" answers that will skew the results. While the repertory grid, as the proposed technique, does not eliminate entirely this aspect, through its collaborative approach it reduces the interviewee's tendency to supply socially desirable answers. As such an approach that will reduce this bias and report actual answers will be more appropriate (Cleveland, Kalamas, Laroche 2005). In addition, Cleveland et al. (2005) specify that the combination of independent and dependent measures into a single instrument places limits on the ascertainment of cause and effect relationships.

Therefore, this study is taking a different approach to the positivist one favoured by the previous researchers: a constructivist approach. The data collection technique congruent with a constructivist approach is repertory grids.

The repertory grid procedure is consistent with the ontology and epistemology derived from Personal Construct Theory. It is consistent with qualitative research focusing on the interpretation of meaning but also allows statistical analysis to be conducted (Jankowicz 2004). In Jankowicz's words: "a technique that uses both numbers and words and the qualitative/quantitative distinction is unhelpful" (p. 71-72).

Cases

Cases are selected using a purposive sampling design.

The selection is based on the researcher's knowledge of the industry complemented by additional sources such as newspapers, wine magazines, TV shows and discussions with specialists in the field (to ensure triangulation).

The selection of cases is based on the following criteria (King 2000):

a) existence (or not existence) of environmental practices at the operational level (as listed in Pilot Appendix 1). The environmental literature suggests that the variability in organizational response ranges from proactive to reactive (Sharma and Vredenburg, 1998). Ten cases of a reactive and ten cases of a proactive approach to environmental practices are selected.

Based on the practices listed on Pilot Appendix 1 and the information gathered from the industry, the selected cases exhibit the following profile:

	Existing (or incipient) practices	Non-existing practices
Proactive 1 to 10	2,3,5,7,9,10,12,(8)	1,4,6,(8),11
Reactive 1 to 10	10, 12,5	1, 2, 3, 4, 6, 7, 8, 9, 11

Table 3.1 Summary of environmental practices by group

b) expressed interest in the study by the participant (willingness to participate).

c) potential contribution to theory. Industry sources, government agencies and general press help in selecting the cases with the most potential to contribute to this research. Different type of organizational ownership (private, public, government) is expected to produce new useful information.

The number of cases selected is irrelevant when using a multiple case design, yet they should be a reflection of the number of case replications (Yin 2003). Following Bowen (2002) example, a total of twenty cases will be used with an anticipated total of twenty interviews. This number conforms to Yin (2003) recommendations regarding multiple-case analysis (he recommended 6-10 cases that would provide compelling support). At the same time, the data generalization, primarily relates to generalizing from data to theoretical propositions rather than wider populations (Yin 2003). The generalization is also strengthening by following replication logic. The replication logic is similar to multiple experiments logic and requires a careful selection of cases that would predict either similar or contrasting results (Yin 2003). Using replication logic strengthens the data generalization and increases the design's external validity (Yin 2003 p 34).

Key informant interview

For each case, given the availability and existing operational constraints, one individual is purposely selected and interviewed: one with immediate involvement and responsibility of implementing and maintaining environmental policies at the operational level (in most of the cases, the winemaker). As such, the criteria of selection is based on their position within the organization, knowledge of the organizational processes and environmental practices, their length of employment with the organization (min of 3 years) and willingness to help. Bowen (2002) used similar criteria in analyzing the role of discretionary slack in corporate greening initiatives using a qualitative approach.

The key informant's position and its visibility, employment length along with his/hers previous experience in operational implementations justifies the option for only one respondent per organization. In addition, (following Yin's (2003, p. 22) recommendation regarding the components of the research design) based on this study's research questions the *unit of analysis is not the individual, but the constructs elicited from the individual.*

Each participant is provided with a letter that conveys the purpose of the research, their role and the confidentiality protection (Appendix 3). It is anticipated that each interview will range between 1 to 1.5 hour (Jankowicz 2004). The researcher takes notes particularly when eliciting new constructs and their opposing poles and a copy of the manual grid is provided to the interviewee at the end of the session. In order to reinforce the construct validity, the participant is asked to review and modify the grid of necessary.

3.1.3 Data collection and analysis:

Procedure: repertory grids

The choice of technique (repertory grids) is based on its recent extensive application in education (Macsinga, Maricutoiu 2008, Foster 1992), counselling and clinical practice (White 1996, Bannister and Fransella 1986), organizational behaviour (Jankowicz 1987) tourism (Pike 2007, Botterill and Cromption 1992), business (Diaz de Leon and Guild 2003), entrepreneurial behaviour (Woods 2006) and intentional group development (Akrivou ad Boyatzis 2006) as well as marketing research (Pike 2007) and strategic issue diagnosis (Dutton et al. 1989). In addition, in 1990 Hisrich and Jankowicz used this technique to study intuition in venture capital decisions and underlined how intuitions affect perceptions and judgments and how investors materialize them in relation to a proposal. These studies suggest that repertory grid would be a useful instrument in eliciting personal beliefs and meanings in the present study. This concept was proven by Tanner (1999) in her study of constraints on environmental behaviour that was based on a previous exploratory study that used repertory grid to elicit behavioural constraints. In addition, Cassell et al. (2000) emphasizes major benefits derived from this technique: ability to access information embedded in an individual's personal construct, gives the participants the opportunity to reflect on their own constructs and to the researchers to challenge and clarify their own understanding of the situation.

Repertory grid is developed as an investigative technique that would first remove the observer's error on what was observed and second allows individuals to reveal their own personal meanings. This, in turn would enable confident predictions about individual's behaviour, increase in data accuracy and reduction in social desirability of answer (or "faking good") (Macsinga, Maricutoiu 2008, Jankowicz 2004).

The method offers strong face validity due to the level of freedom that the respondent has in making judgments (Pike 2007) and makes explicit a person's understanding of issue content (Dutton et al. 1989).

Furthermore, the framework of this study TPB (Theory of Planned Behaviour) implies a volitional component and individual meanings, beliefs, experience and knowledge as predecessors to intention. As such, repertory grid seems well suited in tracing these individual meanings/beliefs (constructs) to explain the differences in behaviour between respondents.

Each grid features four components: main theme (subject of the grid: implementation of environmental practices), elements (events, objects: specific environmental practices), constructs and rating system (scale from 1 to 5). Therefore, each individual will express their own meanings (constructs) regarding the elements and evaluate them against their constructs. As a result, the evaluator's subjective framework is reduced (Macsinga, Maricutoiu 2008).

Elements:

The elements, as per Kelly's (1963) suggestion, should be related to the subject and the context of interest. The elements could be elicited or provided by the researcher (Pike 2007, Jankowicz 2004). The number of elements used by researchers ranged from nine (Pike 2007) to 37 (Foster 1992).

In this study, 12 elements were supplied by the researcher and selected from The Environmental Charter issued by the Wine Council of Ontario as a directory of environmental practices recommended for a sustainable winery operation (Pilot Appendix 1). The selected elements articulated the operational aspects of the environmental practices. The Charter was distributed to all wineries in 2007 and it is assumed that the participants are familiar with them prior to the elicitation process. The elements are representative of four areas of concern (Water use and conservation, Solid waste Management, Energy efficiency, Integrated Pest management) represented equally (three elements from each area) (Pilot Appendix 1).

Constructs:

While the constructs could be supplied (Jankowicz 2004), Kelly indicated that they should be elicited from the participant as the most accurate picture of personal meaning and predictive of behaviour.

I choose to supply one construct as an "overall" construct: 'need to implement' and elicit the rest from the participants. According to Honey (1979) technique, an "overall" construct is supplied to each interviewee to assess the "individual stance to the topic as a whole" (Jankowicz 2004 pg 170). The overall supplied construct "need to implement" serves two purposes. First, it allows identification of elements that are perceived as necessary by the industry at this time and as such would have an impact on the regional policy (allows elimination or modification of recommended policies), and second, facilitates understanding regarding the relationship between the elicited constructs and the overall construct (states for each case an understanding of what is important and aggregates the perceived importance for the whole sample).

Elicitation:

Following Jankowicz's (2004, 1995) suggestion and Woods (2006) application, a two-phase semi-structured interview with the key informants will proceed as follows:

Brief explanation of the way in which constructs will be elicited triadically: by presenting three elements at a time, followed by a rating of all elements on each construct.

The first part of the interview elicits constructs regarding the elements (environmental practices) and follows a standard grid technique as outlined in Appendix 1. Each participant is presented with the 12 elements (in a triadic format) and invited to provide as many constructs as possible.

Second part of the interview targets the supplied construct as follows:

With one exception, all the constructs were elicited from the interviewees: these are *their* ways of making sense of the topic. However, in each interview, one construct, 'need to implement', was supplied. Since the purpose of the whole interview was to determine the thinking involved in a decision to implement, ratings of the practices on this supplied construct can be seen as an overall summary of the meanings in the grid, and the way in which these ratings relate to the elicited constructs (Cleveland, Kalamas, Laroche 2005).

This process permits a very precise description of the personal sense-making involved in a decision to implement.

The supplied construct (need to implement) was chosen based on its emergence in both SID and TPB literature and research.

In accordance with TPB theory, the element of time is expected to be relatively short to ensure that the measures are not alienated by unexpected influences (Ajzen 1991). Since the Canadian corporations operate on a 12 month fiscal year and all the business decisions and further evaluations and reporting to the government agencies are based on this time line (CCRA), it was deemed that a 12 month (1 year) period will satisfy the time requirement. In addition, based on the researcher's experience in the corporate financial field, businesses adopt new operational practices that require financial support on a priority basis developed from one fiscal year to another. Therefore the 'need to implement' construct will target a period of one year. The answers are manually recorded and a matrix grid generated from each interview. Each participant is supplied with a copy of the grid at the end of the interview (Pilot Appendix 2).

Due to the time and financial constraints any interview follow up is conducted via email and/or phone calls (Coderre and Mathiew 2004).

Data Analysis:

Yin (2003) suggests that analytical difficulties related to data analysis could be reduced if there is a general analysis strategy based on theoretical propositions, rival explanations or descriptive frameworks**.**

Following Jankowicz (2004) suggestion, the analysis of data is done shortly after the interview. The analysis involves two stages: within case analysis (individual case reports generated to indicate the outcomes of the theoretical propositions) and cross-case analysis or synthesis (integrating the outcomes of the research across the multiple cases).

The analysis targets two aspects: the individual grid analysis and the aggregate grid analysis by group (proactive and reactive). Each individual grid is analyzed in two steps: description of basic grid (eyeball analysis, construct characterization) (Jankowicz 2004 p. 72) and description of structure in the grid (cluster analysis, principal component analysis) (Jankowicz 2004 p. 95-144).

Jankowicz (1995) suggest that key informant interviews are well suited to content analysis. Content analysis pools and categorizes the constructs based on common themes. The categories could emerge from the constructs or be theory generated or a combination of the two (Jankowicz 2004).

In order to understand the structure of the constructs and assess their respective categorization, principal component analysis and cluster analysis are employed for each case and content analysis for the aggregated cases.

Cluster analysis (individual grid analysis)

Cluster analyses are based on a mathematical algorithm that calculates sum differences between ratings in each grid (calculating it by both columns and rows) and generates similarity codes (Diaz de Leon and Guild 2003). The procedure (Jankowicz 2004 p. 101 and 115) to convert the sum differences (SD) into similarity codes follows:

(1) Turn sum of differences (SD) into percentage sum of differences: {SD/[(LR-1) x C]} x 100 where LR is the largest rating possible (in this study is 5) and C the number of constructs.

(2) Turn the percentage sum of differences into percentage similarity score:

100-{SD/[(LR-1) x C]} x 100.

(3) For the constructs calculation, since there are two poles and a reverse relationship may occur, the formula changes as follows: {SD/[(LR-1) x C]} x 200 followed by

100-{SD/[(LR-1) x C]} x 200.

The most similar related constructs are presented side by side in a graphic, with the constructs that are connected by "branch" sharing a comparable percentage of similarity and reflecting the individual rationalization (Pilot Appendix 3).

Diaz de Leon and Guild (2003) used a similar approach by conducting content, cluster, principal component analysis, cognitive complexity and extremity analysis. WebGrid 5 software package and Microsoft Office Excel 2007 are used for analysis purpose.

Principal Component Analysis (PCA) (individual grid analysis

Fransella, Bell and Bannister (2004) propose a number of multivariate approaches for examining the joint representation of elements and constructs. They suggest that a representation in two dimensional spaces can be obtained using singular-value decomposition.

Principal component analysis, commonly used for grid analysis, is better known as singular-value decomposition or Eckart-Young decomposition and consists of an iterative process that approximates a grid by the product of two matrices: a matrix of columns (elements) and a matrix of rows (constructs) component loadings. The process identifies patterns of variability (components) in a descending order. Once the largest amount of variability is removed, the next one is identified (Jankowicz 2004, p. 128); the more components extracted, the better the approximation of the original data (Fransella et al. 2004). In other words, the process identifies a weighted composite for as much variance as possible and continues the process for the remaining variance.

The component loadings are based on the decomposing the grid into eigenvalues and eigenvectors for both columns (elements) and rows (constructs). Therefore using single-decomposition we obtain two sets of eigenvectors and a single set of singular value that form a product that approximates to the data grid. The loadings are transformed both by using a 'symmetrical normalization process' (multiply each element and construct eigenvector by the square root of the singular values). In addition, the loadings are not unique, and the process rotates the factor loadings (varimax rotation) so that the approximated solution has a structure reflecting components with high loadings and others near zero (Fransella and Bannister 2004 p.112). WebGrid 5 software package carries out an analysis of the double-centred matrix of distances between elements with all construct ranges scaled to be the same.

The largest variation in the first component could account for up to 50% of total variance and is used as an indicator of cognitive complexity (Fransella et al. 2004). According to Webber (1996), a low cognitive complexity would be attributed in a situation in which the variance in the first component is higher than 60%. Cognitive complexity reflects the individual associations of different issue aspects. In other words, a higher cognitive complexity suggests a variety of aspects being considered as opposed to only one or two dominating themes (Adams-Webber 1996, p154). This approach is recommended by

Fransella et al. 2004 (p 119) as “an approach able to distinguish between different patterns of construct relationships”

One more item needs to be clarified: the sample size. Since the unit of analysis in this study is the constructs elicited, it is anticipated that the number of constructs would be around 10-20 per grid. Some academics consider that this number is inadequate for a principal component analysis (Sapnas and Zeller 2002).

While the singular-value decomposition analysis as well as factor analysis traditionally requires a larger (N=50) sample size, De Winter et al. (2009) conducted an exploratory factor analysis (EFA) on a psychological dataset and investigated factor recovery when deviating from a simple structure. They used six combinations of sample sizes to analyse the interaction between the determinants when N=25 small, N= 100 medium and N= 1000 high and level of loadings at low=0.4 and high=0.9 and concluded that “when data is well conditioned (high loadings, commonalities and low number of factors) with factors well defined and limited in number, EFA can yield reliable solutions for sample sizes below 50”. They also found that even a very small sample size (10-17) was adequate for satisfactory factor recovery. In addition they mention: “ considering that models are useful unless grossly wrong and a small sample size factor analytical model is not per definition grossly wrong, applying factor analysis in an exploratory phase is better than rejecting EFA a priori (citing MacCollum 2003)” (p 171).

Content analysis (aggregate analysis)

Content analysis consists in categorizing constructs based on their expressed meaning (Jankowicz 2004 p. 148). The main categories are derived from the TPB (attitudes, social norms and perceived control).

The employed content analysis combines a bootstrapping and theory – based approach with Honey’s procedure as exemplified by Jankowicz 2004 (p.173-176). For each case, the constructs are classified within the pre-determined categories (TPB derived) while any additional broad ones (as a result of bootstrapping) will allow further development of theory (TPB). The content of each category is clearly defined using Appendix 2 as a reference.

Reliability is a necessary criterion for validity in the study and without it all results and conclusions in the research project may be doubted or even considered meaningless. This

study followed very closely the procedure recommended by Jankowicz (2004, p.155-163) as well as Diaz de Leon and Guild (2003).The reliability of categorization for each case is obtained in a two stage process: first the researcher assigns the constructs within subcategories (constructs with similar meanings are grouped in subcategories as determined by the researcher). The subcategories are assigned to the pre-determined categories from the TPB framework of analysis: attitudes, subjective norms, perceived behavioural control, and additional two categories: profitability and reputation. Second, the constructs are randomized and an independent researcher reassigns the constructs to his/her own subcategories and pre-determined categories. The classifications is discussed, rates of success recorded and reconciled (Diaz de Leon and Guild (2003) with a targeted 90% agreement (Jankowicz 2004 p. 161-162 refers to Cohen's Kappa or Perrault-Leigh Index of 80% or better). Inter-coder reliability indexes Cohen's Kappa and Perrault-Leigh are calculated for both phases of the reliability check.

Content analysis using Honey's (1979) procedure (aggregate analysis)

In order to assess the relative importance of constructs, a specific analysis procedure will be conducted for the supplied construct 'need to implement'. The procedure follows Honey's technique (Honey 1979, Jankowicz 2004 p.169-177) in which the ratings obtained on this supplied "overall" construct ('need to implement' in this study) only are converted into similarity scores. The conversion procedure (Jankowicz 2004, p. 173) is as follows:

a. Calculate sum of difference (SD) between 'need to implement' and each construct

b. Calculate sum of difference (SD) between the reversed 'need to implement' and each construct

c. Record the lower of the two SDs.

d. Convert the SD into similarity codes (see Cluster analysis procedure)

These similarity codes are separated into three indexes: high, intermediate and low (H, I, L) and allocated to the pre-determined categories (attitudes, social norms and perceived control from TPB). The results are tabulated to reflect the relative importance of constructs within each category. This method aggregates the sets of constructs for the sample but also allows the preservation of individual views (Jankowicz 2004). In other

words, a participant could score, for example a 75% on a construct which would be an Intermediate (I) score for him (all his/hers constructs score between 60 and 90%); while another participant would have a High (H) score assigned for the same percentage (all his/her constructs score between 50 and 80%). This is due to the fact that the second participants' scores are overall lower in comparison to the first participant's scores. As such, the method preserves the individual scores while aggregating them into categories.

The construct differentiation between proactive and reactive organizations (see Research question 1) are obtained through the cross-case analysis. Common constructs between cases (based on proactive-reactive organization classification) and their frequency is investigated.

3.1.4 Ethical considerations

Three ethical considerations emerge in this study: confidentiality, anonymity and accuracy.

The participants are presented a letter (e-mail format Appendix 3) that explains the purpose of the study and procedure as well as ensuring confidentiality and anonymity and the right to withdraw from the study. This is particularly important since government agencies will be benefiting from the anticipated results.

The accuracy of the constructs is enforced by providing each participant with a copy of the elicited grid and the opportunity of modifying their constructs upon reflection. In addition, each grid is supplemented with information from other sources: books, wine guides, newspapers as part of the triangulation process and to increase the amount of information on each case.

3.2 Pilot study

Due to its novel content and application (2007), the data regarding implementation of environmental practices at the operational level within the Ontario wine industry is limited, even scarce. There is an imperative need for information in this area to provide a solid basis for the development of policy and a mechanism for monitoring compliance with regional recommendations. A pilot study was therefore conducted as a feasibility study for the main proposed research paper.

The objectives of the pilot study are:

1. Determine and understand the type of constructs that make up the mindset of the decision-makers in the wine industry.
2. Estimate an average number of constructs per interview.
3. Assess the reliability and validity of the data collection method (repertory grid)
4. Refine the data analysis method

3.2.1 Method:

Two companies were selected and interviewed and a repertory grid was formulated for each one. One of the company was selected as proactive while the other as reactive

The interview process followed the procedure outlined in Appendix 1. The elicited constructs are recorded in the exact format (language) used by the participants in order to ensure an accurate expression of interviewees' perceptions. The output of the interview is presented in a matrix format known as repertory grid (Pilot Appendix 2).

3.2.2 Data Analysis:

Three types of data analysis were conducted: cluster analysis, principal component analysis (individual grid analysis), and content analysis using Honey's method (aggregate analysis). The purpose of the cluster analysis is to determine patterns of meaning by identifying individual construct groupings. The content analysis allows categorization of constructs (exploratory at this point for piloting purposes only); principal component analysis facilitates assessment of cognitive complexity and the Honey's (1977) method

assists in understanding the meaningfulness associated with "need to implement" for each construct and element.

3.2.3 Results:

While the pilot study is only indicative, it is anticipated that the main study will offer more insights into the decision makers' intent to implement environmental practices at the operational level.

A total of 35 constructs were elicited with an average of 17 constructs per interview. Two constructs were eliminated (minimize waste and green marketing advantage) due to identical rating for each element. Diaz de Leon and Guild (2003) obtained an average of 11 constructs per interview and therefore, based on this pilot study, it is anticipated that between 11-16 constructs per interview will be acceptable for the main study.

Data was analyzed using WebGrid 5 software package and Microsoft Office Excel 2007.

Cluster analysis (individual grid analysis):

Cluster analysis consists of grouping elements and constructs by their interrelationships and generating a grid that positions the most similar items side by side in tree-diagram (dendrogram) format. As mentioned in Chapter 3 section 3.2.2, an algorithm calculates sum differences between rating in each grid (calculating it by both columns and rows) and generates similarity codes. (Diaz de Leon and Guild 2003).The most similar related constructs are presented side by side in a graphic, with the constructs that are connected by "branch" sharing a comparable percentage of similarity and reflecting the individual rationalization.

Participant# 1 proactive organization (Pilot Appendix 3 Diagram 1) shows a tight structure with three main construct clusters. The first sub cluster associates five constructs (90% similarity) and reflects the respondent's perceived importance of having knowledge and genuine care for the environment ("altruism/care for the environment") in addition to the opportunity of marketing this advantage and gaining status. The second sub-cluster combines six constructs with an 85% degree of similarity and reveals the importance associated with compatibility issues with suppliers/customers and government compliance in addition to considerations of "time consumed" and "energy savings". The

last sub-cluster (80% similarity) combines issues related to ease of implementation with the industry size "reaching industry critical mass".

Due to the fact that this project has implications at the policy level, it is important to understand the participant's perception of the proposed environment practices (the 12 elements selected). The cluster analysis signals that this respondent highly associates (90% similarity) the alternate cleaning methods with alternative fuel sources /fuel efficient equipment and alternative sources of energy as solar and geo-thermal energy. Besides, a close cluster (85%similarity) deals with water management practices: triple rinse containers, install shut off valves/water meters and mechanisms for backflow into the water supply.

Participant # 2 reactive organization (Pilot Appendix 3 Diagram 2) indicates a close association (95% similarity) between concepts of resisting the change with using the existing equipment in place and the "existing cheaper alternatives". The next sub-cluster (90% similarity) groups together concepts related to short-term thinking/old school with the lazy/reactive style and the chances of not grabbing the opportunity to "make money out of it".

The elements exposed a tight structure with an obvious cluster (90% similarity) that combines alternative fuels and energy sources with water management practices (cleaner production approaches, install shutoff valves/water meters and solar, geo-thermal energy and distillation of alternative products).

Principal component analysis (individual grid analysis):

Principal component analysis is based on an extraction process of successive components(or patterns of variability) with the first one being able to account for the largest variation; second, residual variation, third most residual variation etc.(Jankowicz 2004, Diaz de Leon and Guild 2003). The largest variation in the first component could account up to 50% of total variance and is used as indicator of cognitive complexity (Fransella et al. 2004). According to Adams-Webber 1996, a low cognitive complexity would be attributed in a situation in which the variance in the first component is higher than 60%. Cognitive complexity reflects the individual associations of different issue aspects. In other words, a higher cognitive complexity suggests a variety of aspects being considered as opposed to only one or two dominating themes (Adams-Webber 1996, p.

154). The same approach is recommended by Fransella et al. 2004 (p. 119) as “an approach able to distinguish between different patterns of construct relationships”

Pilot Appendix 4 illustrates the maps generated by the principal component analysis with the variance % for each component. The horizontal line represents the first component while the vertical line, the second component.

Participant 1 (Pilot Appendix 4 Diagram 1) displays a total variance of 49.2 % in the first component while Participant 2 (Pilot Appendix 4 Diagram 2) displays a variance of 39.1%. As such, the second participant (reactive organization) will have a higher cognitive complexity (also having the largest number of constructs).

The map generated for each participant reflects how constructs and elements are positioned along each component. The distance (angle) between any two constructs accounts for the level of correlation between these constructs: the smaller the angle the higher the correlation.

For the proactive company (Pilot Appendix 4, Diagram 1), we can see that constructs related to knowledge, market advantage, compliance, reputation are closely related to the first component.

For the reactive company (Pilot Appendix 4, Diagram 2), constructs related to resistance to change, cost, time, effort are highly important.

Content analysis (aggregate analysis):

The constructs were content-analyzed and categorized (using a generic content –analysis procedure as per Jankowicz 2004 p. 151) in three predetermined categories derived from Ajzen’s Theory of Planned Behaviour as well as using a bootstrapping technique as suggested by Jankowicz 2004 in order to account for any categories not considered under the TPB model.

A two-stage process confirmed the reliability of the classification scheme. The first categorization was done by me and subsequently, two more researchers were asked to reclassify the randomized constructs. An initial success rate of 83% was followed by discussions, explanations and reclassifications until a consensus was reached.

The process reveals a total of five categories: attitudes, social norms, perceived behavioural control (all three predetermined from TPB), gain/loss and reputation.

The categories and the corresponding constructs were kept separately for the proactive and reactive organization in order to meet the purpose of the research (Pilot Appendix 5). The summary in the Pilot Appendix 5 indicates that the reactive organization's main constructs are placed primarily in the attitudes category (30%) and secondly, with a common 25%, in the social norms and gain/loss category. The PBC category accounts for the last 20% of the constructs. In contrast, the proactive organization allocates 38% to PBC and 23% to attitudes. The social norms and gain/loss categories share 15% of the total constructs.

We can tentatively conclude that for a reactive organization, concepts related to change, time, effort involved and short-term thinking (planning) take priority in assessing the implementation of environmental practices. In addition, visibility and gain (either financial gain or marketing advantage) make up a total of 80% of concepts related to implementation of environmental practices. From a TPB perspective, attitudes and social norms account for 55% of the strength associated with intent, while PBC accounts for only 20%.

For a proactive organization, the priority is taken by concepts such as knowledge, control over the resources and the existence of safe and standardized systems, followed by constructs related to altruism, consideration for industry size impact and effort. Based on the TPB model, PCB and attitudes account for a total of 61% of intent strength while a social norm explains only 15%. Also, the proactive organization exhibits an interest in reputation enhancement, a fact not shared by the reactive organization.

Therefore, this could indicate that a reactive organization, although with a higher cognitive complexity, displays straight forward thinking focused on gain/loss, visibility and short-term planning. On the other hand, the proactive organization, with a lower cognitive complexity, focuses its constructs on a larger range of categories by including considerations related to resources, visibility, reputation, industry compatibility and safety. The main study will allow further exploration.

Content analysis using Honey (1979) technique (aggregate analysis):

Developed as a refinement of basic content analysis, this method aggregates the sets of constructs for the sample and also allows the preservation of individual views (Jankowicz 2004).

According to Honey (1979) technique, an overall construct is supplied to each interviewee to assess the "individual stance to the topic as a whole" (Jankowicz 2004 p. 170). The overall supplied construct is "need to implement".

Constructs:

The procedure (Honey's technique 1979) consists in obtaining ratings for the supplied construct (need to implement), compute sums of differences for each construct against the supplied and allocate the percentages in three categories: low (L), intermediate (I) and high (H) (known as HIL indices). These indices allow identification of importance both at individual level (high, low or intermediate may vary between participants) and collective level (aggregate it by category or subcategory). Once the constructs are allocated into categories (using the same categories as in the content analysis above), the HIL indices will reflect the importance assigned by the subjects to the topic. In other words, if the HIL index is high, that particular construct is important, if it is low, the construct is not central to the topic.

The results of this technique are illustrated in Pilot Appendix 6.

The proactive respondent exposes a high interest in compliance with government regulations (88.75%) and safety issues (85%). These constructs correspond to social norms and PBC categories. Therefore, the issue of compliance and safety will trigger a need to implement environmental practices. Second, but still important is the market advantage and altruistic attitudes (80%). Looking at the average % similarity per category, the proactive business values social norms at a high level (80%) followed closely by gain/loss consideration (76.87%), attitudes (75.83%) and PBC (74.25%). The maximum differential of 6% between categories reflects again a broad range of issues that are considered simultaneously by the proactive organization in relation to the need to implement environmental practices.

The reactive respondent values the most constructs related to cost (72.5%), customer visibility(68.75%) ease(67.5%) and gain opportunities ("making money out of it" 66.25%). In terms of averages per category, social norms (65.5%) and gain/loss (65%) take priority. As such, the need to implement environmental practices is focused on visibility and gain/loss consideration

Elements evaluation according to "need to adopt"

Although the Honey technique's focus is on construct analysis, due to the practical application of this research, a brief element evaluation is added to provide identification of practices that are deemed unnecessary by the organizations at the time of research. The evaluation is based on the ratings assigned by the participants and reflected in Pilot Appendix 2.

Looking at the Pilot Appendix 2 and examining the rating of elements (environmental practice), the proactive business considers the practices of using cleaner production approaches for barrel testing, using equipment that doesn't use diatomaceous earth, introducing new technologies to minimize energy consumption and installing high efficiency lighting, not necessary at this time.

The reactive organization considers that using cleaner production approaches for barrel testing: e.g. vacuum testing and triple rinse or pressure rinse containers and take them to a recycling depot with paper or cardboard taken to a municipal landfill or wholesaler are not necessary practices at the operational level.

Cross-case analysis:

Constructs:

From the 33 constructs elicited, it is interesting to note that the constructs derived for both organizations are relatively common (cost, effort, time, investment, care for the environment, advantage etc), yet their association differs. While the proactive organization views implementation of environmental practices through a lens based on knowledge, care and compatibility and compliance with the stakeholders as well as impact on the whole industry, the reactive organization views the same implementations through a different perspective: what do I have already in place, why change it, is there

any gain to come out of it. We could reason that the organizations' approach in operational implementation is dissimilar. The main study will offer more insights.

Elements:

From an element perspective there is a comparable approach to the operational practices with both organization grouping together elements of alternative fuel/energy sources and water management practices, indicating a consistency in views regarding specific operational practices (wineries are maintaining similar processes). This fact is emphasized by a common practice that both organizations find unnecessary to implement: using cleaner production approaches for barrel testing: e.g. vacuum testing

3.2.4 Conclusion:

The purpose of the pilot study was to gain an understanding of the type of constructs that would emerge from this study, the proper analysis method and its reliability and validity as well as assessing the potential contribution to the regional policy. *While the pilot study is only indicative*, it is anticipated that the main study will offer more insights and ample analysis into the decision makers' minds in relation to intent to implement environmental practices at the operational level. The research questions are answered as follows:

1. What are the constructs and main drivers underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

The elicitation of the grid and cluster analysis and principal component analysis facilitate identification of construct and distinguishing between the two type of organizations' thinking (section 3.2.3 Cluster analysis, Principal component analysis)

2. To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intention to adopt environmental practices at the operational level?

The content analysis pinpoints the categories, number of constructs, frequency (for the main study, since only two organizations were piloted on) and their strength within the TPB model (section 3.2.3, Content analysis).

3. What is the magnitude of the gain/loss and reputation constructs and how does it affect the decision to implement environmental practices at the operational level?

The question is answered via content analysis, section 3.2.3

4. What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

This question is answered through analysis using Honey's (1977) technique, section 3.2.3 (Content analysis using Honey (1979) technique, Elements evaluation according to "need to implement"*)*

3.3 Chapter Summary

This chapter presented the research design and methodology as well as a pilot study's results and analysis. While the pilot study's results are only indicative, they allow an early identification of potential constructs and the testing of the analysis methods. The main study will be presented in Chapter 4 and Chapter 5.

CHAPTER 4 FINDINGS AND ANALYSIS

4.1 Introduction

This chapter presents the results obtained as a result of 20 interviews conducted in Ontario (Canada) wine industry. The selected wineries were sorted in two groups: proactive and reactive organizations. This chapter presents a detailed analysis of the results using specific repertory grid methods. Next chapter will deal with the discussions regarding the impact that these constructs have on the intention to implement environmental practices in the Ontario wine industry.

4.2. Results and individual grid analysis

A total of 20 interviews (20 wineries) were conducted, over a period of two months, resulting in a total of 335 constructs. Out of those, one construct for each interview was provided by the researcher ("need to implement"). Accordingly, 315 constructs were elicited from the participants. The elicited constructs are divided as follows: 142 constructs obtained from the proactive organizations and 173 from the reactive organizations respectively.

The purpose of the research is to understand the type and differences between the constructs elicited from proactive versus reactive organizations. As such, the repertory grids generated by using WebGrid5 software were grouped into proactive and reactive types and analyzed as follows: cluster analysis to understand how the respondents organize their thinking, principal component analysis to assess the cognitive complexity and main cognitive themes, content analysis as outlined by Jankowicz (2004) to assess the strength of the categories and the TPB application , and content analysis using Honey's technique (Honey 1979, Jankowicz 2004 p. 169-177) to identify and evaluate the constructs that participants relate to the need to implement environmental practices at the operational level. Section 4.2.1 and 4.2.2 will present the overall trends visible in individual grids. The results that are presented reflect the exact manner of communication as obtained from the participants. In other words, the participants' wording is kept intact to expose individual expression.

4.2.1 Analysis of individual grids: Cluster analysis

As mentioned in Chapter 3, cluster analysis consists of grouping items (elements and constructs) based on pattern recognition and interrelationships. The algorithm calculates sum differences between ratings in each grid calculating it by both columns and rows and generates similarity codes (Diaz de Leon and Guild 2003). The most similar related constructs are presented side by side in a graphic, "tree diagram" or dendrogram (Pilot Appendix 3). The constructs that are connected by "branch" indicate close connection in a participant's mind.

Since we are looking at two groupings of participants (proactive and reactive) the total amount of clusters with a similarity of 80% and higher were summarized in Appendix 7 (Appendix 7.1 for proactive and 7.2 for reactive organizations). Without losing the individual assessment made by each participant, the grouping (proactive versus reactive organizations) allows us to obtain an overall group insight and assess highly important group clusters. The clusters were sorted in a descending order to reflect the highest percentages of similarity at the top as an indicator of main construct associations' characteristic to this participant group. Both groups contain some constructs that are independent from the main clusters. While these constructs are not to be ignored, they reflect individual assessment and as such not common characteristic for the group. Hence, only the common associations are considered in this study.

It is notable that the proactive organizations generated a total of 39 clusters while the reactive organizations generated 53 clusters.

A tight cluster structure (many close related clusters) indicates cognitive interdependence between constructs. In other words the participant sees the constructs closely associated with each other when evaluating an operational implementation. At the opposite side, a loose structure reflects an assessment done on an individual construct basis (Diaz de Leon and Guild 2003).

Cluster analysis for the proactive group

From a total of 39 clusters, four participants (P1, P4, P8 and P10) show a tighter structure with four or more clusters being generated. The group produced a total of three highly matched clusters (100%). As shown in the Appendix 7.1, 8 constructs were highly matched and reflects the high importance the group puts on stewardship of the land, reduction in pollution as well as affordability. Sustainability constructs are also reflected in the next closest matched clusters (98%). In addition to sustainability, image, projecting a carrying attitude are critical to this group. Next clusters with lower percentages of similarity introduce important constructs related to profitability (94%), ease of implementation (92%), effort (90%) and knowledge (90%). P1 and P10 participants closely relate construct of positive profitability with a reduction in operating costs (94%).

P 9 reflects a tight cluster that groups four constructs highly matched constructs (90%): knowledge-lack of knowledge, financial investment--status quo altruism/care for the environment/care for the land--disregard for the environment and land and market advantage--neutral effect.

In a similar format, P4 groups elements of planning, necessary training and government incentives as highly matched at 88%.

At the same 88% the group associates constructs of maintenance, time consumed, new equipment and required financial investment with customer perception, competitive advantage and economic necessity. At 83% match, constructs related to industry standards and compatibility is closely related to required changes to the existing systems (P 10, P6). The industry size and expected return on investment appear highly matched at 81 % (P6, P9).

Based on the cluster results the constructs highly matched can be summarized as follows:

1. Stewardship of the land and affordability
2. Image impact and profitability
3. Knowledge and need of specific resources(time, effort, equipment)
4. Industry standards, compatibility between business partners, and the expected Return on investment and payback period

Cluster analysis for the reactive group

The reactive group generated a total of 53 clusters from which eight participants (R10, R9, R7, R6, R5, R4, R2, R1) show a tight structure with more than five clusters each highly and closely matched; the percentages of similarity obtained are very compact with a maximum constant variation of 2% (100%, 98%, 96%, 94% etc) indicative of a tight cluster structure (Appendix 7.2).

The group highly matched (100%) constructs related to operational control, projected image (R1) with waste minimization and marketing advantage. Closely matched at 96%, constructs related to profitability and increase in costs (R6, R1) are followed by a 94% match between constructs reflecting specific resources necessary : time(R10), effort, operating costs (R2, R4) and knowledge. It is interesting to note that R10 associates time with existing knowledge as critical in implementation: need to learn how to operate it--don't buy it without knowledge, takes time to implement--leave it as it is. R 9 associates at 94% required effort to change with existing, cheaper alternatives and using the existing equipment.

The return on investment (ROI) and the size of the output (R6) is closely related (92%) to leadership position (R5, R6), press (R6) and opportunity (R9). R9 associates concepts of proactivity with opportunity (making money out of it) and short-term thinking.

Market scale (R2, R1) and improved efficiencies constructs (R2, R1) are linked to government incentives and ability to continue business in the future (R7). In addition lack of industry standards and incompatibility with the suppliers/customers triggers a status quo response from R4 (85% match). The group considers climate impact in association with government incentives (R4, 81%) as an important issue in implementing operational environmental practices.

Based on the cluster results the constructs highly matched can be summarized as follows:

1. Operational control and minimizing waste
2. Image, marketing advantage and profitability/operating costs
3. Specific resources: water, effort, time, knowledge and return on investment/payback period

4. Market scale, industry standards and required changes to the existing systems
5. Climate impact and government incentives

Cross-case analysis

Both groups exhibit a low 2% percentage range of variability between subsequent highly matched clusters. While the different constructs echo similar meaning, the association between them differs between the groups.

The reactive group connects stewardship of the land with the ability to stay in business (business sustainability) and a potential marketing advantage (90% similarity) while the proactive group relates the stewardship of the land with affordability and long term sustainability.

Knowledge is one of the constructs that is viewed by both groups as a highly needed resource associated with financial investment and expected return.

Image positioning and its relationship with profitability/market advantage is a common stance for both groups.

Although industry size and compatibility between partners are common concerns, the proactive group perceives a relationship with expected returns while the reactive group recognizes the scale of required changes. In other words, for the proactive group the size of the potential market and the standards within the industry have to justify the investment with a short payback period.

For the reactive group the size of the potential market and the standards and compatibility within the industry have to justify changes to the existing, proven systems.

The government implication is also perceived differently by the two groups. The proactive group related government compliance with a need to implement environmental practices, while the reactive group seeks government financial help as means to speed up the implementation and reduce the costs (also related to climate impact).

4.2.2 Analysis of individual grids: Principal component analysis

As indicated in chapter 3, Section 3.2.3 , principal component analysis (or singular – value decomposition) is based on an extraction process of successive components(or patterns of variability) with the first one being able to account for the largest variation; second, residual variation, third most residual variation etc.(Jankowicz 2004, Diaz de Leon and Guild 2003). The first two components account for approximately 75% of total variance (first component up to 50%, second component up to 25%) and provide meaningful insight related to individual judgments. Cognitive complexity reflects themes, judgments, individual thinking as revealed by the first component patterns. Accordingly, a low cognitive complexity is associated with more than 60% variance in the first component. Low cognitive complexity suggests a ”everything relates to everything” attitude, interconnected type of thinking with few issues being identified as important (Diaz de Leon E, Guild P, 2003), while a high cognitive complexity suggests an independent, distinct assessment, with many issues being considered independently.

Table 4.1 below displays the summary of first two components for the individual groups. Although both groups show less than 60% variance in the first component, as indicative of high cognitive complexity, the reactive group shows more component variability(26.1) with a range fluctuating from 52.3 (R6) to 26.2 (R8). In contrast, the proactive group’s first component varies from 48.8 (P5) to 31.5 (P3) for a total of 17.3.

Table 4.1 shows that five organizations within the reactive group reached over 60% in the total of the first two components, while in the proactive group, 7 participants meet the same criteria. We could conclude that, while both groups reflect a high cognitive complexity (many issues being assessed), the proactive group reveals a slightly lower cognitive complexity than the reactive group. With other words, the proactive group would ponder over fewer “themes” or matters than the reactive group when appraising implementation of operational environmental practices.

Proactive				**Reactive**			
	Total	First component	Second comp.		Total	First comp.	Second comp.
P1	58.4	31.8	26.6	R1	64.9	37.1	27.8
P2	50.5	31.7	18.8	R2	60.1	42.2	17.9
P3	50.1	31.5	18.6	R3	60	40.2	19.8
P4	69.6	42.2	27.4	R4	53	31.3	21.7
P5	70.3	48.8	21.5	R5	60.1	40.9	19.2
P6	61.5	43.1	18.4	R6	72.2	52.3	19.9
P7	64.6	47.3	17.3	R7	59.2	36.2	23
P8	61.4	40.9	20.5	R8	48.1	26.2	21.9
P9	73.2	49.2	24	R9	55.2	39.1	16.1
P10	61.4	40.5	20.9	R10	58	30.1	27.9

Table 4.1 Summary of first two components (percentage variance) by group

In order to understand the group thinking, and following Diaz de Leon and Guild's (2003) lead, the highest two construct loadings of the first component were summarized and important themes were derived. The importance (priority) was assessed based on construct frequency and both (importance and themes) were agreed upon with two other researchers. Table 4.2 below summarizes the themes (motivators) inducing the organizational assessment.

Priority	*Proactive*	Frequency		*Reactive*	Frequency
1	ROI, payback, operating costs impact	6		Knowledge about the practice and its efficiencies and learning curve	5
2	Ease to implement	5		Impact on operating expenses and profitability	4
3	Knowledge about the practice and its efficiency	3		Size of Expected savings (time, money, energy etc) long term and short term	4
4	Government incentives	2		Affordability	3
5	How much administration is required	2		Ease of implementation	1
6	Reputation enhancement	1		Ability to reuse the materials	1
7	Market size, scale of operations	1		Output sufficient to justify implementation	1
8				Customer /Market advantage	1

Table 4.2 Motivating Themes by Group

A review of Table 4.2 indicates that, even though the groups exhibit common themes such as: knowledge, cost, profitability impact, ease of implementation and market/reputation advantage, their order of priority (assessed importance) differs. While the reactive group needs plenty of information regarding the operation and expected efficiency of the new practices prior to considering the impact on the bottom line, the proactive cluster analyses the impact on profitability (ROI, payback period, operating expenses impact) first, followed by investigating the ease of implementation before engaging into a more rigorous research process to obtain the required knowledge.

One might expect the reactive group to prioritize government compliance/incentives and potential increased administration as triggers to necessary change. It could be argued that knowledge and information is highly important for this group as means of understanding if the changes to the existing systems (implementing new practices) would be beneficial in the long run regardless of the existing standards. Once the potential benefits are assessed, the government incentives/compliance will be reviewed.

From a different perspective, the proactive group analyses the impact on profitability in long-term (ROI, payback period) and short-term (impact on the operating expenses) and the complexity of required change before considering the knowledge and government incentives/compliance issues. This would suggest that, based on their prior experiences in environmental practices implementations, this group isolates and prioritizes specific variables that are critically affected by these changes and they're engaging in controlling them. This group uses their prior experience to anticipates upcoming changes within the industry standards and engage on a proactive path as means of positioning themselves within the industry (industry leadership) and customer base.

4.3 Results and aggregate analysis

4.3.1 Content Analysis

Content analysis as recommended by Jankowicz (2004) are conducted and a total of 32 subcategories identified (Appendix 4). Chapter 3, section 3.2.3 establishes the importance and the suggested procedure to ensure reliability. Accordingly, the content analysis followed a two stage process.

In the first phase, the researcher analyzed and categorized the constructs based on their similarity in meaning. Once the subcategories were determined, I classified each subcategory into the 5(five) main categories as follows: attitudes, subjective norms, perceived behavioural control (all three coming from TPB), profitability and reputation. Any constructs deemed to belong to a different category, were kept separate.

The second phase consisted of having another researcher grouping constructs, generating own subcategories and set them into the same five categories or more if necessary (in order to establish reliability as described in section 3.1.3 of the methodology chapter).

The individual (from each researcher) information was inputted into Excel spreadsheets. Upon analyzing the spreadsheet data, it transpired that we agreed on 22 subcategories with a calculated Cohen's Kappa of k1=0.6593 and Perrault-Lee Index 0.8144 (p=0.05 confidence interval being 0.79 to 0.84). The predetermined categories (as per TPB) recorded a Cohen's Kappa of 0.9737 and Perrault-Lee Index of 0.9860 (p=0.05 confidence interval being 0.96 to 1) (Appendix 8.1).

Lastly, the differences between the two researchers were discussed and reconciled. As a result, some of the subcategories were expanded or renamed to suit the topic described by the constructs. For example Resources subcategory was divided into more subcategories: Time, Administration, Labour, and Maintenance; Long-term feasibility/efficiency was renamed Efficiency or Lifestyles was renamed Environmental Identity.

Accordingly, we agreed on 32 subcategories with a calculated final Cohen's Kappa of 0.9767 and Perrault-Lee Index of 0.9885 (p=0.05 confidence interval being 0.96 to 1). For the main pre-determined categories, upon reallocating subcategories between categories (for example we agreed to move climate from subjective norms to PCB), the final calculated Cohen's Kappa of 0.9809 and Perrault-Lee Index of 0.9900 (p=0.05

confidence interval being 0.97 to 1) (Appendix 8.2). In addition to the spreadsheets, a diary was kept to ensure a systematic and objective approach and reduce any bias that might affect the reliability of the process. Appendix 4 illustrates the final results of the content analysis.

Since the content analysis is based on data collected from two different independent groups with the same number of respondents with two response sets, a bivariate analysis without interactions using nominal dichtonomous scale of measurement was conducted for each subcategory. A 95% confidence level was selected as typical for social and marketing studies (De Vaus 2002, p. 134-136) and z-test for two proportion was calculated using excel spreadsheets (Appendix 9). The hypothesis:

H_0: $P_1 = P_2$

H_a: $P_1 \neq P_2$

was tested to conclude: accept H_0: $P_1 = P_2$

As Appendix 4 illustrates, PCB accounts for a total of 135 constructs (42.86%), subjective norms 46 constructs (14.6%), attitudes 67 constructs (21.27%), profitability 48 constructs (15.24%) and reputation 19 constructs (6.03%). At the group level, the proactive cluster shows a total of 58 (40.85%) constructs while the reactive one a total of 77(44.51%) constructs. The difference is generated by a larger emphasis that the reactive group puts on efficiency (4 more constructs), affordability (5 extra constructs), time, new equipment and expected outcomes (a total of 10 extra constructs). An interesting aspect is the fact that the two groups exhibit a surprising consistency in the number of constructs allocated to the subjective norms (20 proactive with a 14.08%, 26 reactive with 15.03%), attitudes (32 proactive, 35 reactive), profitability (23 proactive, 25 reactive) and reputation (9 proactive, 10 reactive) which would reflect a like-minded assessment.

Following with a frequency count, the analysis allows specific identification of differences between groups in terms of constructs distribution.
Subcategories that shown significant differences between proactive and reactive organizations are related to efficiency, affordability, financial investment, long term thinking and responsibility for the environment, wine contamination, stewardship of the land and bottom line impact (as outlined in Appendix 4).

It is worth mentioning that while the proactive organizations view stewardship of the land, profitability and affordability as critical, the reactive organizations considers primarily short and long-term profitability, affordability followed by responsibility for the environment and future as critical. Similar results were obtained from the cluster analysis (section 4.2.1 and Appendix 10).

The categorization is based on previous literature and studies as outlined by the literature review chapter

The results obtained were grouped into five main categories: perceived behavioural control (PCB), subjective norms, attitudes (all three derived from Ajzen's Theory of Planned Behaviour), profitability and reputation. Subcategories included in the PCB involve concepts of feasibility, control, specific resources such as time, labour, equipment, financial investment. For example some of the constructs included were: ability to do it ourselves, ease of implementation, increase control over the operations, costly to implement, increased effort and manpower. The subjective norms category contains items related to moral values, customer's expectations, and government and general industry partners (constructs such as: appeals to consumers, comply with government regulations, customers will see it as valuable).

The Attitudes category takes account of participant's attitudes towards land, environment, own product, future, lifestyle (constructs such as: gives a higher quality of life, keeps the land healthy, and preserves land and resources).

While most of the constructs elicited fall into the categories identified by TPB, the compatibility with international standards arises as a new concept that shapes the impact of the subjective norms category.

The profitability category includes two clearly defined aspects: short-term bottom line impact (such as increases bottom line, development of a source of revenue, reduces operating costs, generates cost savings etc)and long-term return on investment (ROI) and payback period (such as increases ROI, long payback period, justifies investment etc).

Lastly, the reputation category illustrates image positioning within the customers' perception and the industry partners (suppliers, competitors). Positioning within the industry contains constructs such as: project a positive image/ attitude, allows setting an example, establish a position, leadership and reputation, set a standard and example for

competitors. Positioning within the customer's perceptions consists of constructs like: have to be on the ball: customer driven, show customers you're responsible, good press, attract customers.

4.3.2 Content analysis using Honey's (1979) technique

Constructs analysis

Honey's content analysis technique (Honey 1979) is designed to assess the individual stance on a topic by supplying an "overall" construct and measuring the sum of differences for each construct against the "overall" supplied construct (both reversed and not reversed) and assign a HIL (high-intermediate-low) indices to the lowest sum of difference (which generates the highest similarity codes). A low HIL index indicates no relation between the construct and the topic; a mixed HIL points towards a lack of consensus between constructs, while a high HIL shows high association and assigned importance between constructs and the topic.

The "overall" construct chosen was: 'need to implement'. The purpose of the study is to identify the categories/subcategories and corresponding constructs that are meaningful to the participants as triggers to perceived need to implement environmental practices at the operational level, and as such, triggers of intent. The categories and subcategories are the same as identified in section 4.2.4. This study considered that a ratio of 50-80% of the number of constructs with similar HIL indices would indicate consensus within the subcategory. Appendix 5 (5.1, 5.2, 5.3, 5.4) illustrates the HIL indices allocated by subcategory and category. Appendix 6 summarizes the HIL indices by group.

Overall, we can see that the need to implement specific environmental practices is highly related to all five categories.

According to Appendix 6 the proactive group generated an I indices in PBC category, subjective norms and attitudes, while an H in profitability and reputation denotes high importance afforded to constructs related to cost savings, return on investment, positive overall profitability as well as expected positioning within the industry and customer base. This analysis suggests that, for the proactive group, the need to implement specific environmental practices is primarily assessed based on concepts related to profitability and leadership positioning within the industry.

The reactive group produced a consistent H index in all five categories. Low importance is assigned to health and safety for employees and environment which could indicate that the proposed practices are not perceived as hazardous to employees or the environment (proactive group mirrors it). Also, mixed indices are related to customer's expectations (constructs such as appeals to customers, customers will see it as valuable). The proactive group exhibits the same uncertainty which could be indicative of an infant concept (customer expectations regarding environmental operational practices) in a recently developed industry not yet materialized in tangible benefits for the organizations. As such, the participants are not positive that the customers value an environmental approach at the operational level.

Water consumption generated mixed indices for both groups indicating a cross group agreement that reduction in water consumption will not be a "show-stopper" for the participants when assessing the implementation of environmental practices.

Table 4.3 summarizes the highest (over 90%) HIL indices by group. At the construct level the reactive group rates considers affordability, responsibility for the environment and profitability as main triggers of "need to implement". In other words a strong affiliation with the environment coupled with perceived affordability and potential profitability would motivate "the need" for environmental implementation.

The findings that the reactive group reflects on many issues prior to the implementation of environmental practices are consistent with the results obtained from the principal component analysis (section 4.2.2): the reactive group has a higher cognitive complexity (higher than the proactive group).

Proactive Pole	***Opposite Pole***	% of similarity
is an economic necessity	not an economic necessity	91.18
purchase more equipment	use the equipment that you have	90.98
compatibility with proven international models	develop your own model	90.63

Table 4.3 Summary of highest percentage of similarity codes using Honey's (1979) technique

Reactive		
Pole	***Opposite Pole***	% of similarity
feasible/affordable	not feasible	94.74
show responsibility for environment	show irresponsibility	94.74
justifies the investment	waste time and money	93.42
increase in capital costs	decrease in capital costs	93.42
ensures future safety for our kids	no safe future for our kids	93.33
is safe for people and land	generates hazard for people and land	93.06
shows care for the land	waste and hazard attitude	93.06
derived by-products generates revenue	cost prohibited	92.11
set a standard and example for competitors and customers	going with status quo	92.11
increase profitability	decrease profitability	92.11
shows environmental stewardship	shows disregard for the environment	91.67
allows natural soil maintenance	requires buying mark and fertilizers	91.67
stewardship of the land	wasteland	91.25
lower costs in the long-run	costs will go up higher	90.79
helps the industry move forward	industry falters and dies	90.79
good moral values	lack moral values	90.79
reduction in carbon emission and pollution	increase in pollution	90.79
increased profitability	increased loss	90.28
need to retrofit existing systems	use old technologies	90
investment	cost	90
look after the environment that you live in	selfish attitude	90
short term thinking	long term thinking	90
believe in it (environmentalism)	don't care	90
old school	modern	90

Table 4.3 Summary of highest percentage of similarity constructs using Honey's (1979) technique (continued)

4.4 Element analysis

4.4.1 Elements analysis using Honey's (1979) technique

In addition to understanding the constructs that are highly related to the concept of "need to implement" environmental practices, this study seeks to understand which of the 12 recommended environmental practices are deemed by the participants as unnecessary at this time.

The "need to implement" ratings were summarized by group (Table 4.4) and a frequency count was performed vertically for any ratings of 4 and 5 (applicable to each practice /element).

Proactive organizations

Elements	1	2	3	4	5	6	7	8	9	10	11	12
P1	3	3	1	3	5	5	3	5	1	2	1	3
P2	5	5	3	5	5	5	3	3	5	5	2	2
P3	2	2	3	2	2	3	2	3	3	3	3	3
P4	2	3	1	1	4	2	3	2	1	2	2	2
P5	3	3	2	3	3	2	3	3	1	3	2	2
P6	1	5	1	4	1	2	3	4	2	4	2	1
P7	1	2	2	3	2	2	3	3	3	2	2	2
P8	3	2	2	2	1	1	2	3	2	3	3	2
P9	4	3	4	1	4	4	3	3	1	3	3	3
P10	1	2	1	2	1	1	2	1	1	1	2	2
frequency	*2*	*2*	*1*	*2*	*4*	*3*	*0*	*2*	*1*	*2*	*0*	*0*

Table 4.4 Summary of Need to Implement ratings by group

Reactive organizations

Elements	1	2	3	4	5	6	7	8	9	10	11	12
R1	3	3	2	3	4	3	2	4	3	2	3	3
R2	5	2	2	2	3	4	5	4	1	3	2	1
R3	5	1	1	1	5	3	5	1	1	1	1	3
R4	2	2	3	2	1	2	3	3	1	2	2	1
R5	2	3	1	5	3	3	2	2	1	3	1	1
R6	2	4	2	2	1	2	5	4	1	2	1	1
R7	3	5	4	5	5	2	3	1	5	4	4	4
R8	3	1	1	3	1	3	3	2	1	1	1	1
R9	4	1	1	4	3	2	1	1	1	1	1	1
R10	4	1	2	3	3	3	3	1	1	1	1	1
frequency	*4*	*2*	*1*	*3*	*3*	*1*	*3*	*3*	*1*	*1*	*1*	*1*

Table 4.4 Summary of Need to Implement ratings by group (continued)

The proactive group deems that practice 5 (introduce production techniques and equipment without using diatomaceous earth) and 6 (introduce cleaning procedures using alternative methods (ozone systems) and install water nozzle for tank cleaning) are not necessary. Equally unnecessary are practices 1 (use cleaner production approaches for barrel testing) and 2 (distillation of marc, lees and musts or development of other products).

The reactive group deems as highly unnecessary practice 1 (use cleaner production approaches for barrel testing), followed by practice 4 (triple rinse, pressure rinse containers and recycle them), practice 5 (introduce production techniques and equipment without using diatomaceous earth), practice 7 (use pallets made from recycled plastic) and practice 8 (incorporate solar energy, geothermal energy). Lastly, practice 2 (distillation of marc, lees and musts or development of other products) is deemed not needed at this time.

Practice 5 (introduce production techniques and equipment without using diatomaceous earth), practice 1 (use cleaner production approaches for barrel testing), practice 4 (triple

rinse, pressure rinse containers and recycle them) and practice 8 (incorporate solar energy and/or, geothermal energy) are considered by both groups as unnecessary.

4.5 Chapter Summary

This chapter introduces the reader to the main findings and their analysis using repertory grid methods. The analysis included both within case and cross- case examination and triangulation of different methods (Appendix 10). These results will be interpreted and referenced to the existing literature and research questions in the next chapter.

CHAPTER 5 DISCUSSIONS AND INTERPRETATIONS

5.1 Introduction

The previous chapter presented the findings and the analysis resulting from 20 interviews conducted in Ontario (Canada) wine industry. The analysis is based on four distinctive methods: cluster analysis, principal component analysis, content analysis and content analysis using Honey's method. This chapter builds on the learning derived in Chapter 4 and interprets and discusses these analyses in order to provide answers to the research questions posed in Chapter 2:

1. What are the constructs and main drivers that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

2. To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intentions to adopt environmental practices at the operational level?

3. What is the magnitude of the gain/loss and reputation constructs and how does it affect the decision to implement environmental practices at the operational level?

4. What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

5.2 Empirical Outcomes: Constructs and Drivers

As mentioned in Chapter 3, the repertory grid technique allows identification of perception commonality within a specific group as well as understanding of similarities and differences in perceptions between groups. The analysis includes both quantitative and qualitative elements and provides a valuable description of individual and group frameworks.

It was indicated in Chapter 4 that a total of 315 constructs was elicited from a total of 20 wineries with 142 constructs obtained from the proactive group and 173 from the reactive group (Appendix 4). The constructs obtained are typical for operational analysis revolving around perceived impact on business functionality, environment and different stakeholders. New constructs were related to climate impact on the decision to implement environmental practices (climate impacts functionality), international compatibility (compatibility with proven systems in other countries) and environmental identity (reflects organizational lifestyle, higher quality of life).

The literature identified many classifications for the pro-environmental factors such as situational factors, attitudes, values, internal, external, subjective, objective etc (as per Chapter 2, section 2.3) as well as main drivers specific to individual industries.

Based on the findings and content analysis conducted (Appendix 4), this study, specific to Ontario (Canada) wine industry, identifies constructs related to

1. Profitability (Bottom line impact, ROI and Payback subcategories account for 15.23% of all constructs),

2. Affordability (Financial investment, Affordability account for 12.38% of all constructs),

3. Stewardship of the land (Stewardship of the land accounts for 6.03% of all constructs),

4. Long-term thinking and responsibility for the environment (4.76% of all constructs),

5. Knowledge (4.44% of all constructs) and

6. Positioning within the industry partners (4.13% of all constructs)

as central factors in assessing intent to implement environmental practices at the operational level for both proactive and reactive groups.

Profitability

In the US wine industry, Marshall et al. (2005) found that managerial attitude and norms are more important drivers than the cost savings. In contrast, the Ontario (Canada) wine industry's main focus is on the potential profitability and affordability. This study's findings concur with Cleveland et al. (2005); Krueger (2003) and Kollmuss and Agyenmann (2002) as well as Siegwart (2007) who found that gain (profit) will be a strong predictor of propensity to act in a pro-environmental manner. Menguc and Ozanne (2005, p.430) also finds that "that the higher order constructs of firms with a Natural Environmental Orientation (NEO) is positively and significantly related to profit after tax and market share".

For both proactive and reactive groups, the constructs included in the profitability subcategory revolve around potential reduction in operating cost, increase in savings, and impact on the bottom line, all indicators of a goal-directed behaviour. Therefore, if the organization perceives a potential gain coming from an environmental practice, a goal-intention behaviour is activated which is the precondition to the (goal) implementation intention (Gollwitzer 1999) and will stimulate an organizational commitment towards the practice. A similar conclusion was reached by Haigh and Jones (2006, as cited by Cornelius, Todres, Janjuha-Jivraj,Woods and Wallace 2008) in relation to corporate social responsibility aspects of business: "instrumental economic benefits dominate the decisions of how to conceptualize and pursue corporate social responsibility" (p.357).

Affordability

The affordability as a critical prompter is aligned with Kollmuss and Agyenmann (2002)'s conclusions that environmental attitude and low cost are significantly correlated.

Our results also concur with Dutton and Duncan (1987) and Sharma (2000) who found the affordability and availability of resources (Sharma calls it discretionary slack) is a critical trigger to organizational change.

Agriculture and Agri-food Canada (2010) mentions:

"Production costs are still an important consideration to the wine industry given that the price of grapes and rising land prices in leading wine-producing areas continually drive up costs."

Although the cost related to the implementation of the 12 environmental practices examined is difficult to estimate without risking to provide inaccurate information (since there are differences between wineries in terms of size, structure, existing equipment, financial capabilities and there is no information regarding individual winery profitability), we can reason that the rising operating costs and the tightening of competitive pressures would have a critical impact on the wineries' perceived affordability.

Additionally, the interviews with the participants confirmed the organizational change literature's King (2000)'s and Delacroix and Swaminathan (1991)'s conclusions that organizations would prefer a low level incremental change that would not jeopardize their established structures. In one of the reactive (R3) participant's words: "I am environmentally sensitive but also aware of the costs involved" or, "I'll implement environmental practices as long as it doesn't cost me more than the alternative in place" (R9).

Stewardship of the Land

Stewardship of the land and responsibility for the environment is a prominent subject in agricultural studies. Hinds and Sparks (2008), Ryan et al. (2003) and Kaiser et al. (1999) found it as a significant predictor of intentions to engage with the natural environment. This study agrees that stewardship and responsibility towards the land and environment has a significant impact on the intentions to implement environmental practices at the operational level. These concepts (stewardship of the land and responsibility for the environment and future) are mostly related to the affective domain and trigger an emotional response to a rather rational decision. As Georg and Fussel (2000) indicate, emotion and rationality are not mutually exclusive. Whether described as aspiration or consciousness, stewardship of the land and responsibility for environment and future activates a subjective interpretation and response based on personal values and psychological variables (Barr 2003). However, this study finds that, opposite to Ryan et

al. 2002's findings on mid-western Michigan farmers, economic compensation (profit) overrides the affective attachment to the land (for both proactive and reactive groups).

Since this research's results conform to the conclusions reached by the entrepreneurship literature, Krueger (2003)(who indicates goal attainment as a strong predictor of intent), Kollmuss and Agyenmann (2002) (who indicates a least-cost approach to environmentalism) and Stern and Dietz (1994) (stating that personal needs , or in this case corporate profitability needs, are met before any concerns with social or non-human issues are exhibited) it could be concluded that the wine industry in Ontario (Canada), due to its competitive nature in both domestic and international markets, takes more of an "entrepreneurial" approach when assessing the implementation of environmental practices. In other words, as responsible entrepreneurs, the wineries of Ontario (Canada) balance the social, financial (profit) and environmental benefits (triple bottom line concept) as means to sustainability.

Long-term thinking and Responsibility for the Environment

One of the interesting findings in this study is that the proactive group finds stewardship of the land (9.15% of all proactive constructs) as more important than responsibility for the environment (2.11%) while the reactive group emphasizes responsibility for the environment (6.94%) rather than stewardship of the land (3.47%). The same results were obtain from the cluster analysis (section 4.2.1) where the highest matched constructs within the proactive group were related to stewardship of the land and affordability.

Therefore, even though both groups exhibit an affective connection with the land and environment, the proactive group assesses the land as a the critical component of business sustainability (as one of the proactive participants (P5) stated: "land sustains our families, we need to nurture it" or "we've been growing up with care for land and striving to understand how to improve it" (R7)) while the reactive group looks at the environment as a whole and considers more issues as important.

Principal component analysis (Chapter 4, section 4.2.2) strengthens these findings by revealing a higher cognitive complexity for the reactive group (with more themes/issues being considered). How can one explain this paradox? Kelly's (1963) commonality corollary (" to the extent that one person employs a construction of experience which is similar to that employed by another, his psychological processes are similar to those of

the other person" p. 90) and experience corollary ("a person's construction system varies as he successively construes the replications of events" p. 72) explains the fact that , although part of the same industry and producing the same effect, the wineries would exhibit similar constructs but different construct priorities, mainly based on the fact that their prior experiences were different.

Sociality corollary ("to the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person" Kelly 1963 p.95) describes the mutual understanding that takes place between individuals that belong to different groups. Kelly (1963, p. 99) makes a point in emphasising the fact that it takes more than similarity or communality in the peoples' thinking in order to understand each other (groups sharing common knowledge and culture) in a social context. While commonality is incidental and could involve lack of social relationship between individuals, the sociality corollary recognizes the interpersonal rather than common understandings (which is the basis of social psychology).

From a different perspective, yet similar explanation, Jankowicz (2004 citing Winter 1992 p. 219) describes how people change their construing by using three cycles (models): experience (same as Kelly 1963)), creativity cycle and C-P-C cycle (circumspection, pre-emption and control). The creativity cycle displays an interchange between tight construing , loose construing (search for alternatives) and renewed tight construing (revised construct set) while the C-P-T model articulates the phases in which an individual examines various issues: circumspection (investigation for various alternatives prior to concentrating on a single issue), pre-emption (concentrate on a single issue) and engagement in its control (control).

Regardless of the model chosen, they all indicate a similar explanation: the proactive organizations exhibit a renewed tight construing and engage in its control (land is a high priority) whereas the reactive organizations are still searching for alternatives (still in circumspection phase). In other words, the proactive wineries have experimented with different environmental practices and concluded that the focus should be on the land (reduce the variables, reduced cognitive complexity), while the reactive wineries are still in the process of construing and anticipating events (consider a variety of variables, increased cognitive complexity).

Knowledge

Knowledge was found to be an important driver for environmental practices implementation not just in Ontario (Canada) wine industry, but also with Bedfordshire farmers (Beedell and Rehman 2000). A more detailed analysis using principal component analysis shows that knowledge about operation and efficiencies, information, training is a main trigger to intent to implement for the reactive group (Table 4.2). The cluster analysis (Chapter 4 section 4.2.1) also confirmed that knowledge is highly related to profitability and viewed as a necessary resource to operational implementation for both groups. However, whether exposure to knowledge would propel an actual change in environmental stance and activate implementation is not determinable. We can only conclude that knowledge about efficiencies and operating mode would trigger more interest (goal-oriented behaviour) and commitment. A similar observation is outlined by Kuvaas (2002) and Ford et al. (2002) who concluded that a higher level of information would generate a higher level of perceived control and manageability.

Positioning within the Industry Partners

Positioning within the industry partners includes constructs related to establishing a leadership position within the industry, setting an example, good image and reputation, opportunity to gain status, establishing benchmark in efficiency. This study's findings are in agreement with Brammer and Pavelin (2004); Sharma (2000); Bowen (2000); Dutton and Duncan (1987) and strengthens the argument that visibility, image and building a good reputation has a significant impact on anticipated behaviour. The vehicle used to build such reputation is through culture (environmental identity in this study) and behaviour (Cornelius et al. 2008). In Georg and Fussel's (2000 p. 183) words: "from being invisible... into being central actors in an emerging strategic field", the wineries in Ontario (Canada) do see the image/reputation building not only as means of positioning themselves within the industry partners but also as a source of possible market advantage.

The positioning within the customers' perceptions ("customers will appreciated, good press, attracts customers, have to be on the ball") is *not* rated as highly important (1.9%). One might argue that since Ontario (Canada) is a nascent industry competing with internationally well established wine businesses from around the world and catering to a

multicultural customer base, it would need more time and tangible evidence regarding the impact of environmental approach on the customers' perceptions. Between the two groups, the proactive cluster seems to be more optimistic. As one of the participants mentioned: "There is a "mystique" in a natural product and the customers seek it"; or: "there is an "eco-chic" trend when it comes to environmental design and practices appealing to the customers". In contrast, the reactive participants (R7) mentioned: "I don't believe that customers are impressed by organic"

***Conclusion*:**

The discussion around the constructs and drivers results allowed us to answer two of the research questions: research question 1 and research question 3 (question 2 and 4 will be answered in subsequent sections 5.3 and 5.4).

Research Question 1:

> What are the constructs and main drivers that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between proactive and reactive organizations?

The study reveals a total of 315 constructs and six main drivers specific to Ontario (Canada) wine industry: profitability, affordability, stewardship of the land, long-term thinking and responsibility for the environment, knowledge and positioning within the industry partners.

The groups show similar thinking patterns except for stewardship of the land and long-term thinking and responsibility for the environment. These differences were confirmed by triangulation of methods used to analyze the data as specific to this population. Knowledge, positioning within the industry partners and profitability exhibited common judgment patterns between the two groups. The results also confirmed the results from the literature, strengthening the argument that knowledge about the systems and efficiencies is an important factor in a pro-environmental behaviour. Discrepancies between the groups were specific to positioning within the customer base, with the proactive group taking a more positive stance towards customers' appreciation for environmental practices.

Research question 3:

> What is the magnitude of the gain/loss and reputation constructs and how does it affect the decision to implement environmental practices at the operational level?

Gain/loss or profitability was found to be the main implementation driver for this population, with both groups being in agreement. The elements of profitability include both short-term (bottom line) and long-term considerations (payback period, return on investment) and are equally highly rated (as significant) by both groups. These results are aligned with the entrepreneurship and environmental behaviour literature.

Reputation was also found as a strong driver with two separate components: reputation within the industry partners and reputation within the customer base. The two groups (proactive and reactive) agree and perceive environmental practices as means to a leadership position but have different views regarding customers perception of environmental practices.

5.3 Outcomes for Theory

This section outlines the results' implications on the theories developed in the literature review (Chapter 2): Theory of Planned Behaviour, Shapero-Krueger model of Entrepreneurship and Strategic Issue Diagnosis.

5.3.1 Theory of Planned Behaviour (TPB)

The TPB was selected as the framework of analysis for this study. The content analysis grouped the subcategories in broad categories corresponding to TPB theory: attitudes, subjective norms and perceived behavioural control (Appendix 4). All the categories are well represented with attitudes accounting for 21% of the total elicited constructs, subjective norms for 15% and perceived behavioural control for 43%. Although reputation and profitability were kept separately to assess their individual impact, their addition will only strengthen the applicability of the TPB model. As such, our results concur with Tutkun (2006); Krueger (1993, 2007) and Beedell and Rehman (2000).

This study seeks to apply the TPB model in Ontario (Canada) wine industry and to identify individual constructs that affect the perceptual process. It was found that the attitude category includes constructs related to environment such as environmental responsibility, stewardship of the land, pollution, as well as constructs related to health and safety for employees ,environment and wine (as their main product). Environmental identity (organizational lifestyle, perceived higher standard of living) was also identified as an important concept. Since these constructs point towards an altruistic affectively related approach, this research agrees with Schultz (2001) that altruistic and biospheric values are important determinants of environmental attitudes. At the same time, the presence of environmental identity suggests that considerations regarding standard of living and organizational lifestyle are factors that would promote a positive attitude towards environmental practices. These findings align with Sparks' (2007) and Clayton's (2003).

The literature identified subjective norms as an influential factor that would induce intent to perform behaviour (Tutkun and Lehmann 2006; Burton 2004; Christian and Armitage 2002; Beedell and Rehman 2000). The constructs that this research identified point towards collective pressures (customers' expectations, government compliance/incentives, competitive pressures from the business partners, market scale), individual pressures (moral values) and international pressures (compatibility with international models, proven systems in other countries). While this study's results agree with the above authors as well as Wright et al. (2009); Hinds and Sparks (2007) and Marshall et al. (2005), the existence of awareness of international environmental systems and their fast penetration within the wine industry indicates that this construct is a highly emerging factor. This is due to the fact that many winemakers come from France, Australia, USA, New Zealand and even different parts of Canada (British Columbia) and bring with them a wealth of knowledge. In addition, the wine industry in Ontario (Canada) participates in international competitions and it is part of many international associations (International Wine Competition at Vinitaly, The International Wine and Spirit Competition, International Wine Challenge, Sydney International Wine Competition etc). Methods and terminology has been borrowed from other countries. For example, notions of *terroir (*composition of grapes produced in a specific growing region will be influenced by the local environment *) or the art of assemblage (*layering several grape varieties in order to capture the essence of vintage and vineyard) borrowed

from the French wine industry made their way into Ontario(Canada). Whereas many industries are regulated and pressured to adopt international environmental standards (ISO 14000, 14001), this industry is eager to adopt new proven systems as a manner of maintaining and improving their competitive advantage and ensure business sustainability in the future. One of the participants (P8) worded it: "is the way of the future".

The perceived behavioural control category contains constructs related to operational capability (planning and general resources, labour administration, time, maintenance, new equipment, water, and financial investment) as well as control (ease, affordability, efficiency, known outcomes, effort). The PCB category accounted for the highest number of constructs (135) which indicates a highly perceived importance (Appendix 4). Between the two groups, the reactive one considers PCB category the most critical (77 constructs). The differences between the two groups are related mainly to affordability and known efficiencies and outcomes. Similar results were obtained from the cluster analysis (section 4.2.1). These findings concur with Curtis et al. (2007)'s conclusions as well as Krueger (2007) and Sharma (2000), and suggest that a perceived higher level of capability and control activates a likelihood of commitment to action.

Conclusion*:*

Following the above discussion we can answer another research question:

Research Question # 2

> To what extent do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of decision-makers' intentions to adopt environmental practices at the operational level?

It was found that, in the Ontario (Canada) wine industry, all three categories (attitudes, subjective norms and perceived behavioural control) are determinants of intent to implement environmental practices at the operations level. The perceived behavioural control category (PCB) accounts for the largest proportion, making TPB an appropriate framework of intent analysis for this industry (as opposed to Theory of Reasoned Action (TRA) that doesn't consider the perceived behavioural control (PCB) as a determinant of intent). Section 2.5.1, Chapter 2 presented several conservation behaviour related studies

employing successfully the TRA model (water conservation, recycling) and other ones, related to farming and land management, that pointed towards TPB as more relevant. Each industry has its own particularities and as such would require a different framework for analysis. In Ontario (Canada) wine industry both analyzed groups (proactive and reactive) agreed in their allocation of importance for each category: highest strength allocated to PBC, followed by attitudes and subjective norms (Appendix 4). Therefore, it can be said that the intent to implement environmental practices at the operational level in Ontario (Canada) wine industry is best analyzed using the TPB model. This research concurs with Beedell and Rehman (2000); Tutkun (2006); Krueger (1993, 2007) that reached the same conclusion.

The study also reveals a new subcategory of constructs that has a large impact on the subjective norms category for both groups: compatibility with existing international models (in addition to the other referent groups already identified by the literature).

5.3.2 Need to implement, Shapero-Krueger model of entrepreneurship and Strategic Issues Diagnosis (SID)

Section 2.5.1 in Chapter 2 outlines the Shapero-Krueger model and its determinants of intent: perceived feasibility, desirability and propensity to act. The content analysis using Honey's technique tested the impact of the concept "need to implement" on all the constructs. The analysis provides evidence that all three categories (PBC, subjective norms, attitudes) rate high (H) on the HIL indices (Appendix 6). In other words, regardless of the actual value of the percentages, all three categories rate high (H) in the individual's respondent thinking. In addition constructs related to stewardship of the land, responsibility for the environment, care for the land, reduction in pollution as well as affordability and profitability are highly related with the perceived need to implement (table 4.3).

The Shapero-Krueger intentional model (as illustrated in Figure 5.1) considers desirability as the sum of two dimensions: personal attitude and perceived social norms. This study found that, when it comes to implementation of environmental practices at the operational level, the perceived need to implement overrides the perceived social norms. The only social norm construct that received attention was the existing international

models or, in the participants' words: "I'd like to know what other alternatives are out there, what other wine regions do?"

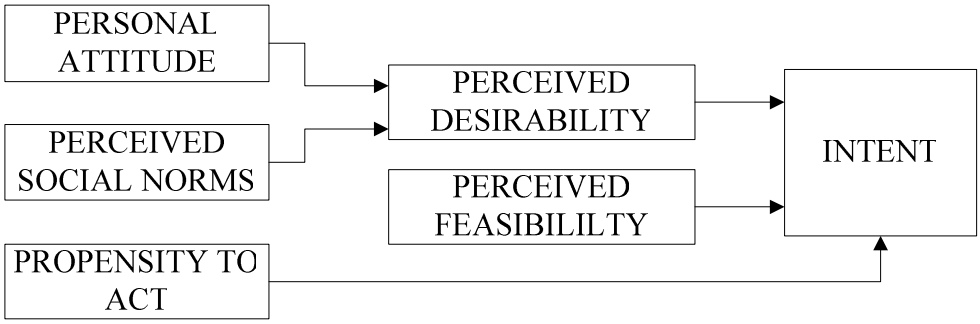

FIGURE 5.1. SHAPERO - KRUEGER INTENTIONAL MODEL

In this study, the triggers of intent are either belonging to the affective domain (care for the land, sense of responsibility) since this industry is highly dependent on the land and environment, or belonging to the business sustainability domain (market advantage, set an example, set a benchmark, good press, compatibility with international models, is an economical way).

The desirability concept is filtered through an affordability lens. While all the participants displayed a strong sense of environmental sensitivity and commitment to preserve both environment (including land) and business, they also do pursue small, incremental changes that are within their financial means: "we do all things we can do that don't cost money" (R4) or "I would like to have a state of-the-art operation but I can't afford it" (P10). As such, it could be concluded that for the Ontario (Canada) wine industry, the intent to implement environmental practices at the operational level is determined by personal attitudes that generate a 'need to implement' which, in conjunction with perceived feasibility would create an implementation goal intent (such as business sustainability, maintaining market share etc) . Once the goal intent is created, the social norms kick in to feed the goal intent (what and how do other referent groups do, what do they think about it, how do they perceive my inactivity or as Eden et al. 1981 phrased it "pay attention to their own and each other's intersubjective knowledge and concerns") and the implementation intent is created.

Yet, we are still missing one piece of the puzzle. According to SID theory (section 2.5.2), an organizational response requires three processes: triggers, feasibility assessment and urgency assessment. While we accounted for the triggers and feasibility assessment, the

urgency assessment was left out. As such, this updated model considers that, as a result of a goal intent confirmed and compared with the referent groups, an urgency assessment takes place that propels the implementation intention. According to Dutton and collaborators, the magnitude of the urgency is determined by the issue's visibility. This study's updated model confirms and takes a similar position: the more socially oriented organization, the higher the perceived urgency to implement. Figure 5.2 illustrates this model.

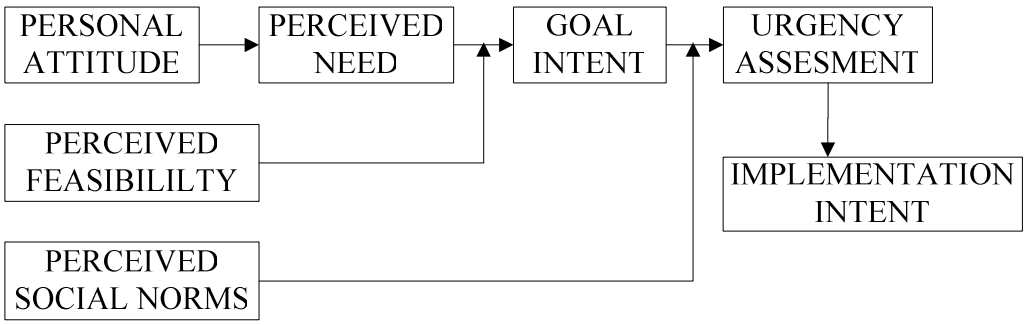

FIGURE 5.2. MODIFIED SHAPERO – KRUEGER - DIMA INTENTIONAL MODEL

At this point we need to reinforce the difference between goal intent and goal implementation. As specified in section 1.1, goal intent sounds like: "I intend to lose 10 kilograms", while implementation intention specifies when, where and how I'll be losing the 10 kilograms.

Therefore, it can be concluded that this new model uses proven concepts from social psychology (Ajzen), entrepreneurship (Shapero-Krueger) and SID (Dutton and collaborators) to arrive at a new format applicable to Ontario (Canada) wine industry's environmental implementation.

***Conclusion**:*

A "need to implement" construct was supplied as an overall construct and examined using Honey's (1979) techniques. The test results allow us to answer the last research question:

Research Question 4:

> What are the constructs and categories that impact the need to implement environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

This research results indicates that

- Constructs related to stewardship of the land, responsibility for environment are highly important in the respondents' minds.
- Affordability, profitability and international standards play a critical role.
- Section 5.2 argued that the Ontario (Canada) wine industry takes an entrepreneurial approach to the decision to implement environmental practices at the operational level. We were able to modify an existing entrepreneurship-intent model to suit the findings and particularities of this industry. It was observed that personal attitudes towards environmental practices propel a 'perceived need to implement' (or propensity to act). The interplay between the perceived need to implement and feasibility assessments would create goal intent. This intent is fed by the subjective norms to move forward to an urgency assessment as the final step to implementation intention.

The second part of the research question seeks to identify the participants' views on the actual practices that they deem as unnecessary at this time. As mentioned in section 4.2. 4 (Table 4.4), practice 5 (introduce production techniques and equipment without using diatomaceous earth), practice 1(use cleaner production approaches for barrel testing), practice 4 (triple rinse, pressure rinse containers and recycle them) and practice 8 (incorporate solar energy and/or, geothermal energy) are considered by both groups as unnecessary.

The individual interviews with the participants indicated that practice 5: introduce production techniques and equipment without using diatomaceous earth (DE) involves safety issues for the employees and as such DE earth is not used any more by the wineries. Practice 8: incorporate solar energy and/or, geothermal energy, although desirable, was found to be quite expensive. The financial impact of this practice is difficult to ascertain, since wineries differ in sizes, structures and the systems come with customizable features, however, according to local distributors (contacted by phone) a

residential geothermal system would cost between C$15,000-40,000, subject to soil structure , type of system (horizontal or vertical), size of the pumps etc. The solar systems' cost of implementation is even harder to estimate since business' geographical positioning (northern versus southern exposure) as well as the climate (Canadian winters are quite long) would affect the efficiency of the system.

5.4 Chapter Summary

This chapter builds on the learning and analysis conducted in chapter 4. The research questions were answered and a modified model of intent illustrated.
The next chapter presents information regarding the significance of the study, its implications at both theoretical and professional level, the study's limitations and suggested areas of further research.

CHAPTER 6: CONCLUSION

6.1 Introduction

The previous chapter discussed and interpreted the results of the research. The chapter provided answers to the research questions posed in Chapter 2 and aligned the research with the rest of the literature as outlined by the academic community.

This Chapter summarizes the research as a whole and provides additional information in regards to significance, limitations and suggested further research.

6.2 Research Summary

The study is conducted in the Ontario (Canada) wine industry and reviews the implementation intention for 12 environmental practices as outlined by the Environmental Chapter issued by Wine Council of Ontario in 2007. The purpose of it is to construct a comparative case study and understand the mindset of environmentally proactive and reactive wineries.

A repertory grid technique, specific to a constructionist approach, was employed and a concurrent embedded strategy of triangulation used. Following Creswell's (2009, p. 214) recommendations, in this method of triangulation, both quantitative and qualitative data were collected simultaneously with one providing a supporting role and being nested within the predominant method.

The 20 interviews conducted generated a total of 315 constructs that were analyzed using several methods: cluster analysis, principal component analysis and content analysis. The research brought together three main bodies of literature, social psychology, entrepreneurship and strategic diagnosis and used Ajzen's Planned Behavioural Theory as the main framework of analysis. The results obtained allowed the identification of main factors that would induce implementation intention in this industry as well as the further development of existing intentional models. The contribution that the study generates affects two areas: theoretical and practical.

6.3 Conceptual contributions

The study addresses a paucity of business research in the wine industry in Ontario (Canada) regarding environmental practices implementation at the operational level. By conducting a single industry study involving a cross-case analysis the study provided theoretical knowledge about the managerial cognition related to environmental practices' implementation specific to this region (Ontario, Canada).

The study determined that, for this specific industry, TPB is an appropriate model to assess implementation intention. The usefulness of the model is supported by empirical evidence indicating that Ontario (Canada) wine industry groups place a large emphasis on the feasibility assessment. The TPB model is further developed to include specific elements (derived from the SID literature) as revealed by the responses received during the data collection. The updated model (Figure 5.2 in section 5.3 Outcomes for Theory) introduces the 'need to implement' as a natural by-product of personal attitudes that in combination with feasibility assessment creates goal intent. The social interaction between organizations (following the established goal intent) would trigger an urgency assessment that would materialize into an implementation intention. Saba et al. (2008) found 'perceived need' the most important factor in determining intention to eat convenience products. Rah et al. (2004) and Kalafatis et al. (1999) also studied the consumers' intention to buy environmentally friendly products and both studies found personal attitudes as critical factors in determining the intention to eat environmentally friendly or soy products. As such, as long as there is a strong positive attitude towards a behaviour (mainly specific to products or factors of production that would have a critical influence on either personal health or business survival), this study's model would be a useful framework of analysis.

On the other hand, if the behaviour in question does not involve a vital element that would shape personal attitude, the model is less applicable. For example, Segal et al.(2005) study on motivations to became an entrepreneur (self-employed), emphasizes that individuals would compare the option between self- employment and working for others as well as the inheritent risk of entrepreneurial activity before forming intentions for self –employment. As long as there is a more beneficial, less risky perceived alternative, there is no immediate 'need' to become self-employed and intent for self-employment does not materialize.

From an empirical perspective (section 5.2), this study examined the implications of three corollaries: commonality, sociality and experience (Kelly 1963) and concluded that the experience corollary would affect the group's perceptions and shape their anticipations and predictions yet the commonality corollary (being just incidental) is secondary to the sociality aspect implied by environmental implementation. In other words, while the commonality allows group members to share common knowledge, the sociality acknowledges that the group members have shared structures, procedures and negotiated agreements about how to act, based on their understanding of each others' construing. Therefore, as illustrated in Appendix 10, the wineries of Ontario (Canada) have different priorities in assessing the necessity of implementing environmental practices at the operational level, they exhibit different level of cognitive complexity (reactive group more highly complex), yet they work effectively together (competitive yet cooperative industry, they understand each other's perspectives as means of high sociality) towards a common goal of industry sustainability.

Another contribution conveyed by this research is the employment of the repertory grid technique to identify and analyse constructs that underlie the decision makers' thinking in relation to implementation of environmental practices at the operational level. Previous studies in business strategy and environmental literature used this technique for descriptive purposes only (Dutton 1989; Tanner 1999), while this study employed a variety of analysis methods to answer the research questions.

In addition to the concepts already recognized by the literature, this study found new constructs related to compatibility with international standards and environmental identity as emerging critical factors. Through this approach, we compiled a list of motivators for operational environmental implementation specific to Ontario (Canada) wine industry that would have both theoretical and professional impact (Table 4.2).

6.4 Professional practice contributions

The purpose of this study is to identify cognitive differences between environmentally proactive and reactive wineries regarding the implementation of recommended environmental practices and devise a framework that would stimulate more wineries in adopting these practices at the operational level.

The study reveals that profitability and affordability are critical factors in the decision to implement environmental practices in this specific region. Both groups exhibited a high interest in the feasibility assessment indicating a high priority allocated to business sustainability (short-term) and control.

The question becomes: how do you encourage voluntary change in common practices when the organizations do not see an immediate benefit?

Voluntarism and a collaborative approach to ensure a sustainable future for this industry is part of the WCO's mandate. As such, the strategies suggested draw from environmental economics, strategic choice, stakeholder theory and this study's empirical evidence to emphasise solutions and recommendations.

6.4.1 Information (Knowledge) asymmetry

The economics literature defines the information asymmetry as a situation in which relevant information that only one party holds would generate an imbalance of power and a different choice selection. In other words, one party lacks the important information and makes an opportunistic choice.

Kulkarni (2004) identifies two types of information asymmetry: between the organization and community and within the business community.

Within the business community

The results obtained from this study are indicative of a lack of information/knowledge specific to the reactive group. Table 4.2 indicates that a reactive organization would respond positively to implementing new environmental practices *if* knowledge and additional information regarding practices' efficiencies, expected outcomes (in term of profitability, cost savings), learning curve and compatibility with international models is

provided. Following the same line of thought, the environmental politics movement (Fisher 2003 p 7-13) emphasizes the need to use local knowledge in order to bridge the gap between technical facts and social values. The participants often mentioned the need to participate in workshops or gatherings that would allow exchange of information between wineries and industry experts. The wineries do cooperate and help each other tremendously. As one of the participants word it (R4): "is a competitive yet cooperative industry". This need for cooperation and information exchange is also recommended by Fisher (2003) as a form of participatory inquiry and citizen-expert collaboration.

At the same time, considering that the sociality corollary prevails, the two groups do understand and cooperate with each other, a peer driven information exchange would increase confidence within the reactive group and stimulate an implementation intention.

Knowledge (information), affordability and ease (complexity) are interconnected. There is an interplay taking place in the mind of the decision-makers that tries to address critical questions and bridge gaps between the need to know what other alternatives are out there (used by other wineries both domestically and internationally), how can they profit their business, how much would it cost to implement it and what would be the long-term benefits, how hard (complex) is it to implement, would it be compatible with the existing systems and is there a government incentive that would stimulate and help me to implement it faster.

This study suggests the implementation of regular specific topic oriented meetings between experts and the wineries' decision makers as well as the development of a communication channel between the wineries themselves (could be something as simple as a Wiki or any Internet discussion boards that allows members to post questions and issues and receive answers). The WCO could act as a liaison agent to assist and ease the information exchange process. This particular recommendation addresses the commonality and sociality issue as explained in section 6.3 Conceptual contributions, and reinforces the common course of action that the industry needs to engage in order to move towards a sustainable industry.

Between organization and community

Kulkarni (2004) suggests that more information regarding the environmental impact of operations on society (negative externalities) would trigger a voluntary action.

Although the wine industry in Ontario (Canada) has specific regulations regarding waste disposal and pesticide storage and handling, more emphasis regarding wine operations' impact on the air quality (emission), water streams and land would increase awareness and trigger a sense of urgency within the wine business community (Table 2.0). The emphasis on social costs that would ultimately reduce the sought-after profitability (as a result of possible government intervention) would capture the attention of a region in which profitability overrides stewardship of the land.

6.4.2 Transaction (Implementation) costs

Minimizing transaction costs is a common business goal (costs incurred in the business process). The Ontario (Canada) wine industry is particularly keen on maintaining business sustainability (profitability is a critical criterion) before land stewardship and recognizes affordability and ease of implementation are important drivers to the implementation of environmental practices.

Generally the transaction costs consist of two elements: direct costs (cost incurred in the process of managing the decision) and opportunity costs (costs of making an inferior decision). The industry expressed concerns regarding the magnitude of the direct costs necessary to implement some of the recommended practices (financial and non-financial): purchase new equipment, initial cost, effort required, additional time required, more administration required, more maintenance required.

The provincial and federal government do provide various incentives and grants to stimulate and promote industry sustainability. The interviews revealed that most of the reactive organizations are not aware of the existence of government packages nor the implications or logistics involved in the application process.

It is suggested that WCO provides short regular reminders about the government incentives and/or grants or any financial aid available (low interest loans or corporate tax credits), during their weekly communication as an avenue to instigate interest (in the implementation of environmental practices) among the wineries. The government

assistance/grants are not perceived as critical by the reactive group. The same results were reported by Beedell and Rehman (2000 p. 126): “those farmers most in need of advice and training are the least likely to seek it voluntarily or use grants or other incentives available to them”. Therefore, an increase in awareness about grants and federal or provincial help available targeted specifically to the reactive group would potentially induce an interest and stimulate more wineries to consider implementation of environmental practices.

The non-financial costs that the participants mentioned are related to the ease of implementation. Based on the 20 wineries interviewed it was found that, contrary to Wright et al. (2009) findings, it is not the age of the leadership that promotes environmentalism but the age of the existing structures and the amount of perceived change necessary to convert them that holds some of the wineries back. Complexity as an organizational adoption deterrent is also emphasized by Batz et al. (1999). It stands to reason that even a young leader (eager to implement newer and more efficient practices) dealing with large and old facilities that require major structural modifications (with exacerbating costs and reduced profitability), would restrain from implementation and instead, adopt an incremental least-cost approach. The incremental, least-cost approach, while conservative in nature could drive important resources in the wrong direction (opportunity cost). The WCO needs to emphasize that an imposed future mandatory government regulation would be more costly (in the long run) than current voluntary implementation. Deferring the costs does not eliminate them. The proactive group’s interest (Table 4.2) in government initiatives reflects their ingenuity in anticipating regulations and positioning themselves accordingly.

6.4.3 Stakeholders pressures

The results of the study indicate that the industry views the domestic competitors as a very important referent group followed by the customers and the international standards.

While the proactive group maintains an optimistic stance, the reactive group is not convinced that the customers’ current appreciation for environmental practices (expressed as an increase in market share, increase in sales and profitability) justifies the investment and therefore, conducting a study surveying the customer’s expectations in relation to

environmentalism in this industry would reduce or, even eliminate perception gaps and increase customer awareness of this industry's operational approach.

From a different perspective, the vast majority of the local customers are employed by the wineries. Increasing individual/employee consciousness about environmental operations and their social benefits (increased standard of living) would diffuse into the internal management of the wineries and provide additional pressure (internal pressures). This recommendation is supported by the proactive organizations' frequent constructs related to increased standard of living, environmental identity, safety for the employees etc.

6.4.4 Differentiation

Differentiating themselves as an environmentally attentive organization producing a high quality product is one of the repeating themes that both reactive and proactive groups brought up (constructs related to image impact, marketing advantage).

The industry views reputation in term of positioning themselves within two specific areas: positioning within industry partners and within customers' perceptions. While the customer's positioning is not clear at this time, both groups are seeking a leadership position within the industry (setting an example, establishing a position, leadership and reputation are some of the related constructs) as means of business sustainability.

The branding of the region's wineries takes different forms. Some proactive wineries lead the industry by running state of the art operations, obtaining international recognition for environmentalism (LEED- leadership in energy and environmental design, LFP- certified farms and processors, Certified Demeter- certified biodynamic production) and making stewardship of the land and environment a part of their identity and citizenship, while others found a different niche and are reducing all the pesticides and synthetic feeders (organic production), and taking an incremental approach by implementing small environmental steps such as: reuse the mark, manure and use cow horns to improve the quality of soil, recycle cardboards and glass, use livestock (lambs) and birds of prey (falcons) to rid vineyard pests, reuse and reduce the amount of water and energy etc.

Regardless of the approach, all wineries exhibit a keen interest and a positive attitude towards environmentalism. This study advocates that a more sustained, aggressive marketing campaign targeting Canadian (Ontario) wines that are produced in an environmentally attentive manner with consideration for land and future (outlining the

benefits), in conjunction with the Environmental Certification (already in progress) and increase in customers' awareness, would benefit the whole region and breed both environmental and business sustainability. In addition, a regular official acknowledgment of the environmentally friendly organizations and their impact in the region would satisfy the organizations' desire for leadership recognition (even media coverage to expand the scope). The literature review (section 2.5.4) emphasized the relationship between reputation/branding and profitability in various industries. Considering that Ontario(Canada) region is interested in short-tem profitability, an increased awareness about industries (local or international) that recorded increase in profitability as a result of pro-environmental behaviour and corporate responsibility would trigger an interest in voluntary implementation.

6.4.5 Environmental Certification

The study analysed specific operational practices and the respondents' views regarding specific ones not required at this time for environmental certification. Practice 5 (introduce production techniques and equipment without using diatomaceous earth), practice 1 (use cleaner production approaches for barrel testing), practice 4 (triple rinse, pressure rinse containers and recycle them) and practice 8 (incorporate solar energy and/or, geothermal energy) are considered unnecessary and it is suggested that they are removed from the certification process.

Lastly, it is worth noting that all the wineries interviewed are environmentally attentive and eager to implement practices that would profit and sustain their business in the future. Therefore, although throughout the study the two groups were referred as proactive and reactive, this study advocates that this region doesnot have reactive wineries that resist the change, but wineries that delay the implementation and take a conservative approach mainly due to a deficit of pertinent knowledge (other factors, as outlined above, would also affect the delay) . It would be up to the government agencies to close this gap and speed up the implementation process (as means to environmental and industry sustainability) or let the wineries do it in due time.

6.5 Research Limitations

One of the limitations of this case study is the geographic area covered by the research. The focus of the research is on the wine industry in Ontario (Canada) as the second largest wine producer in Canada (after British Columbia (BC)) however, including other regions (BC, Quebec, Nova Scotia) would increase the scope and provide a richer base for analysis. According to Yin (2003) case studies provide fewer bases for generalization. The researcher used rigorous replication logic and defined the specific context and conditions where the modified model would apply. As such further testing of this new model (used as a vehicle for generalizing to new cases) to a larger population would alleviate the generalization limitation.

Validity and reliability of repertory grid is a complex subject.

According to Jankowicz (2004, p. 150 citing Hill 1995), reliability includes three elements: stability, reproducibility and accuracy. The stability looks for a lack of variability over time; reproducibility looks after the ability to replicate the data while accuracy looks after consistency in applying established definitions. The study integrated a rigorous approach to increase the reliability. Following Jankowicz (2004) and Fransella and Bannister's(2004) recommendations, the stability criteria is accomplished by recognizing similarities in meaning between participants' constructs (as opposed to focus on the constructs themselves)which are time resilient . Kelly (1963, p. 80) replaces the term stability with "permeability": "permeable constructs, because they possess resiliency under the impact of new experience, do tend to be stable".

The reproducibility and accuracy condition is accomplished by involving an independent researcher to analyze and categorize the data according to the established definitions and recommended (Jankowicz 2004 p. 163) reliability coefficients were calculated to confirm agreement.

Smith (2000) analyzed the repertory grids reliability and validity by using a test-retest format on twenty primary school teachers over a one year period. The results reflected a coefficient of convergence of 0.77.

The Personal Construct Theory considers prediction as a scientific goal and constructs as derived from the anticipatory capability of the human mind. According to Kelly: "It is impossible not to imply prediction when one construes anything" (Kelly 1963 p. 120)

The predictive validity of the repertory grid was confirmed by Fransella and Bannister (2004 p. 150) by analyzing voting behaviour of 74 people. They included the main political parties, a total of ten elements and nine supplied constructs (including 'Self' and 'Ideal Self') and found the 'Ideal Self 'as the best predictor of voting behaviour. The prediction that "the political parties would agree about the relationship between them was validated" The results aligned with the assumptions underlying personal construct theory. "A central tenet of personal construct theory is that it is a psychology of the whole person. Thinking, feeling and behaviour do not function separately" (Fransella and Bannister 2004, p. 150).

Many other studies confirmed the usefulness (Kelly's (1963) concept of validity) of repertory grids. Fransella and Bannister (2004) dedicate a whole chapter (chapter 8) to a detailed listing and brief description of relevant studies in various fields such as: clinical psychology, politics, market research, business etc.

6.6 Further research

As mentioned in section 6.4, a larger study that would involve other wine regions in Canada would provide a better picture of the Canadian wine industry position's regarding implementation of environmental practices at the operational level.

This study looked at common themes between the participants as belonging to two differentiated groups: proactive and reactive organizations. More insight in individual constructs would offer a comprehensive analysis and paint a more realistic picture.

There is a need for more studies that would offer empirical evidence regarding the quantifiable benefits that the implementation of environmental practices would provide. In particular in regards to the customer's change in purchasing patterns as a result of awareness of environmental practices being operational.

The need for knowledge appears to be an important factor and critical motivator in environmental implementation in Ontario (Canada) wine industry. Yet, Aragon-Correa (1998) found that higher level of knowledge will not necessarily generate an "advanced posture" towards natural environment. Hence, a study examining the actual

implementation of environmental practices as a result of increase in knowledge would be beneficial.

Lastly, a modified model resulted from this study. Testing this model to a larger population would allow refinement and generalization of data.

6.7 Conclusion

This chapter summarizes the significance and limitations of this research. Contributions to both theory and practice have been presented and further research avenues identified. This chapter concludes this research study.

It is the researcher's conviction that by maintaining methodological rigor most biases have been reduced, a realistic picture of the decision-makers' mindsets has been painted and new knowledge found to nurture the relationship between men and nature.

And lastly, winemaking is a journey; it takes craft and inspiration to conceive a product that is nothing less than a miracle. Just as Johann Wolfgang von Goethe (1749-1832) - German poet and philosopher said: "Wine rejoices the heart of man and joy is the mother of all virtues". Cheers!

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Appendix 1

Standard Repertory Grid Procedure

a. Randomly selecting three elements (environmental practices) and asking: "When it comes to implementation, which two practices have something in common that is in some way different from the third" (Diaz de Leon and Guild 2003). The same triads will be therefore replicated to each case (winery).

b. Record and check with the participant the expressed construct. The constructs are worded as specific and operational as possible.

c. Allow the participant to rate each of the three elements on a scale from 1 to 5 where 1 represents the expressed construct and 5 the implied contrast (the contrast will also be expressed by the participant). All of the remaining elements will be rated on the expressed construct using the same scale.

d. The elicitation process will continue by asking "how" questions (laddering down) for new constructs until the participant can't offer any.

e. Same process will be applied to another set of three elements until no new constructs emerge.

f. The participant is invited to add any new construct that might not have been captured by the elicitation process (Jankowicz 2004).

Pilot Appendix 1

Environmental practices affecting the operations

WCO 14-6

1. **Water use and conservation**: using cleaner production approaches for barrel testing: e.g. vacuum testing

WCO 1-3, 7-5, 11-2, 17-2

2. **Water use and conservation**: install shut-off valves (or trigger hoses) used on all hoses and press area and install faucet on sinks and rinse tanks fitted with water saving devices (flow restrictors) and installation of meters (or weirs)through different parts of the winery to measure water use and waste water

WCO 12-2, 13-1, 13-4

3. **Water use and conservation**: introduce cleaning procedure (e.g. pressure washer) for the wash and press; use alternative cleaning methods (ozone systems) for winery cleaning and Install high efficiency water nozzle to reduce water used in tank cleaning

WCO 2-2, 3-2

4. **Solid waste Management**: distillation of the marc, lees and musts or development of other products

WCO 4-1

5. **Solid waste Management**: introduce cleaner production techniques and equipment that doesn't use diatomaceous earth

WCO 10-1

6. **Solid waste Management**: using pallets made from recycled plastic

WCO 3-9, 4-3, 4-4

7. **Energy efficiency**: introducing new technologies to minimize energy consumption such as low energy tank agitators, motors, drives and pumps and install high efficiency lighting, automatic technologies such as motion detectors and timers

WCO 5-6, 6-4

8. **Energy efficiency**: incorporate energy efficiency designs such as solar energy (solar photovoltaic, passive solar hot water and wind power), geothermal energy

WCO 7-4, 7-5

Pilot Appendix 1 continued

9. **Energy efficiency**: install alternative fuels sources (biodiesel, ethanol, propane, natural gas, methane, hydrogen) and use fuel efficient equipment (four-stroke engines)

WCO 1-6

10. **Integrated Pest management** : store pesticides on impermeable floor and install curb to contain leaks or spills.

WCO 2-8

11. **Integrated Pest management**: triple rinse or pressure rinse containers and take them to a recycling depot with paper or cardboard taken to a municipal landfill or wholesaler

WCO 2-2

12. **Integrated Pest management**: install mechanisms to prevent backflow into the water supply such as: separate water tank, permanent anti-backflow device or air gap maintained at least six inches above the sprayer tank

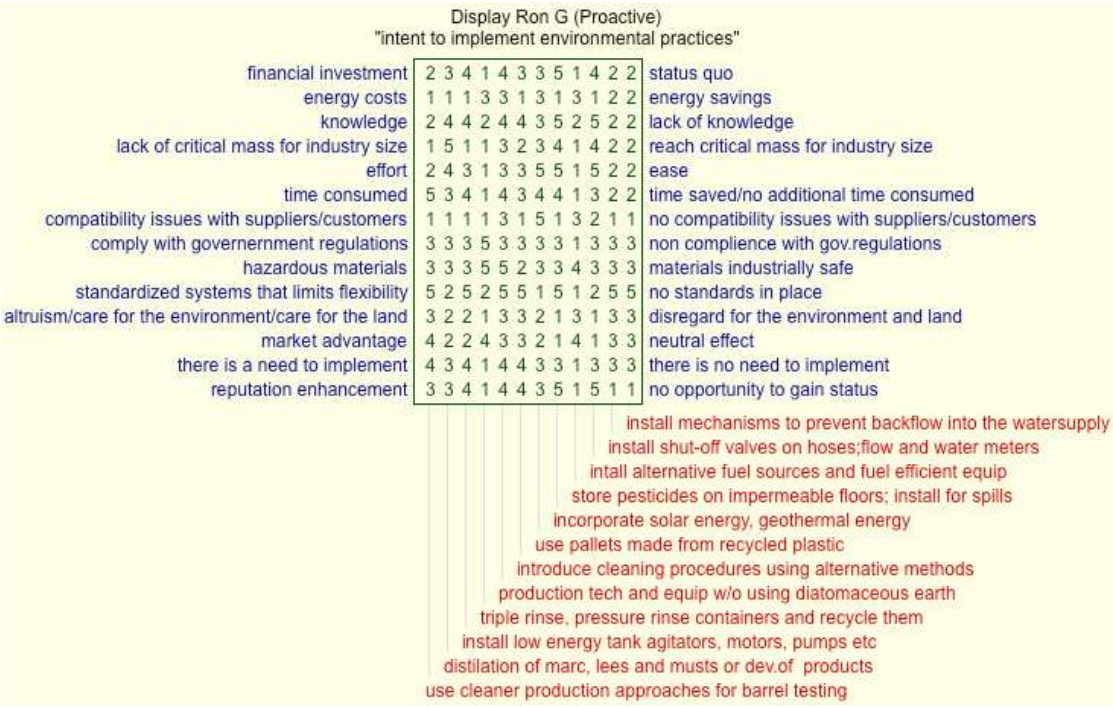
Legend:

The codes represent index numbers from the WCO Charter of Environmental Practices (used for ease of reference)

Pilot Appendix 2 Repertory Grid Proactive organization

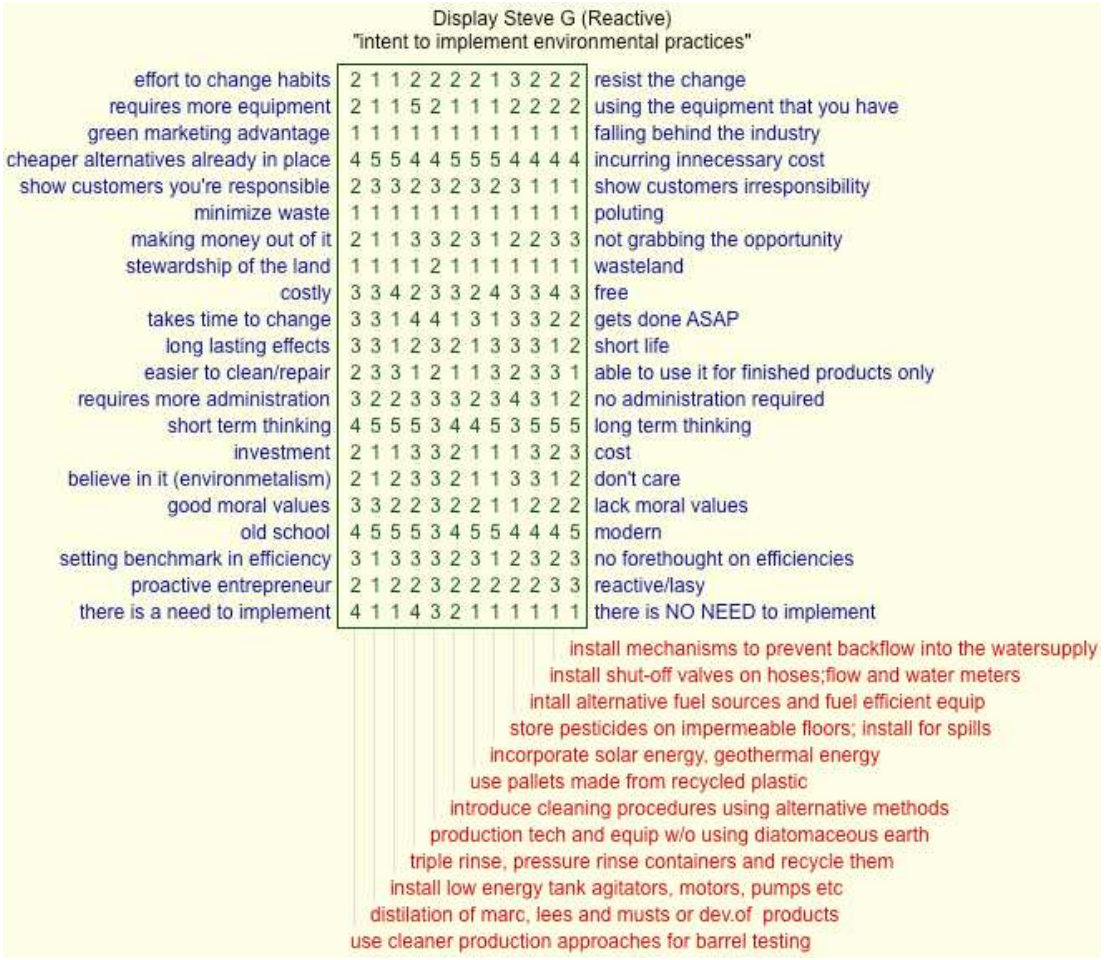
Diagram 1

Repertory grid



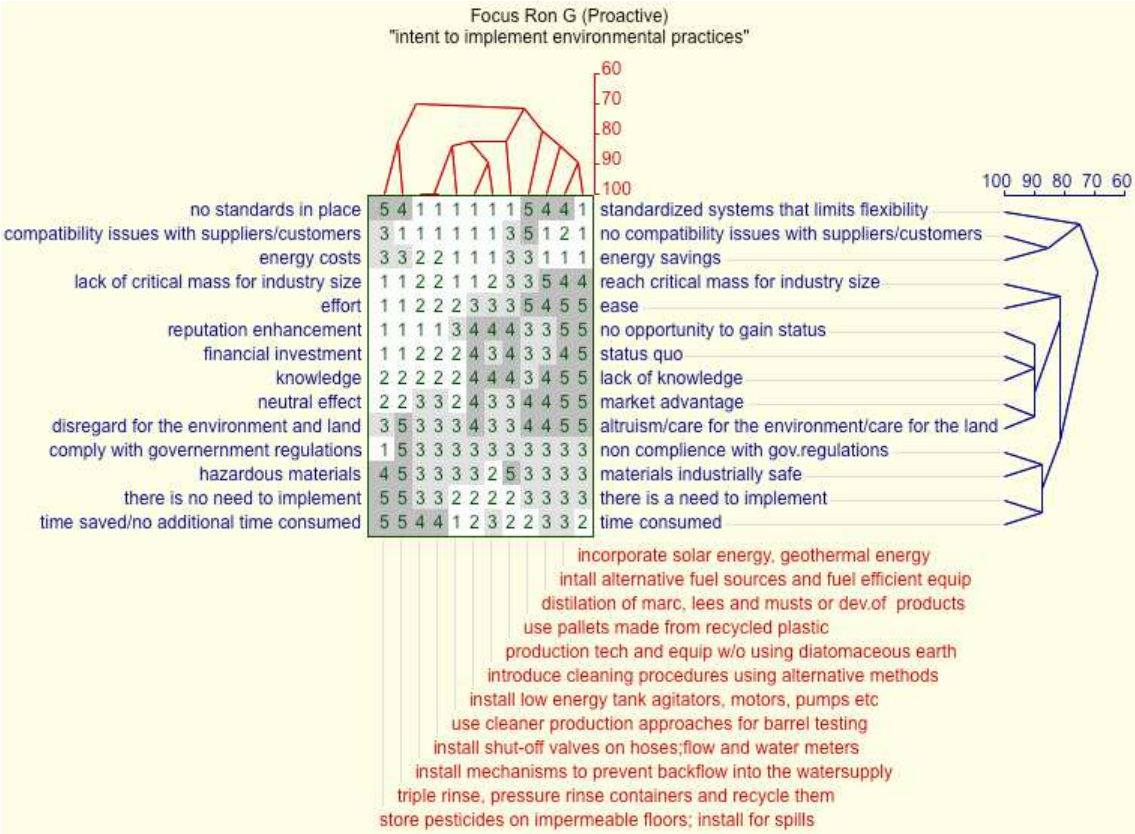
Pilot Appendix 2 Repertory grid reactive organization

Diagram 2



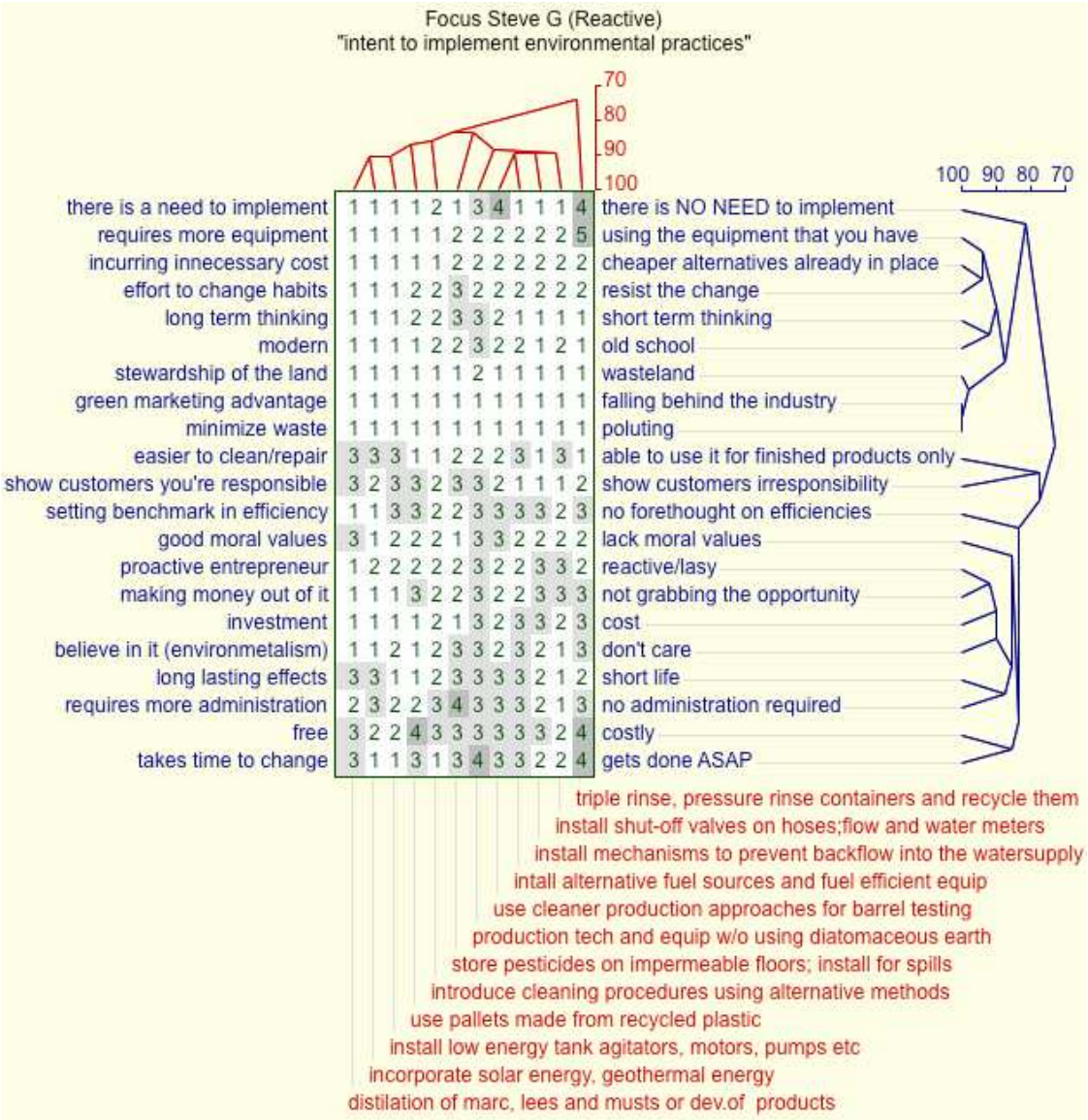
Pilot Appendix 3 Cluster analysis proactive organization

Diagram 1



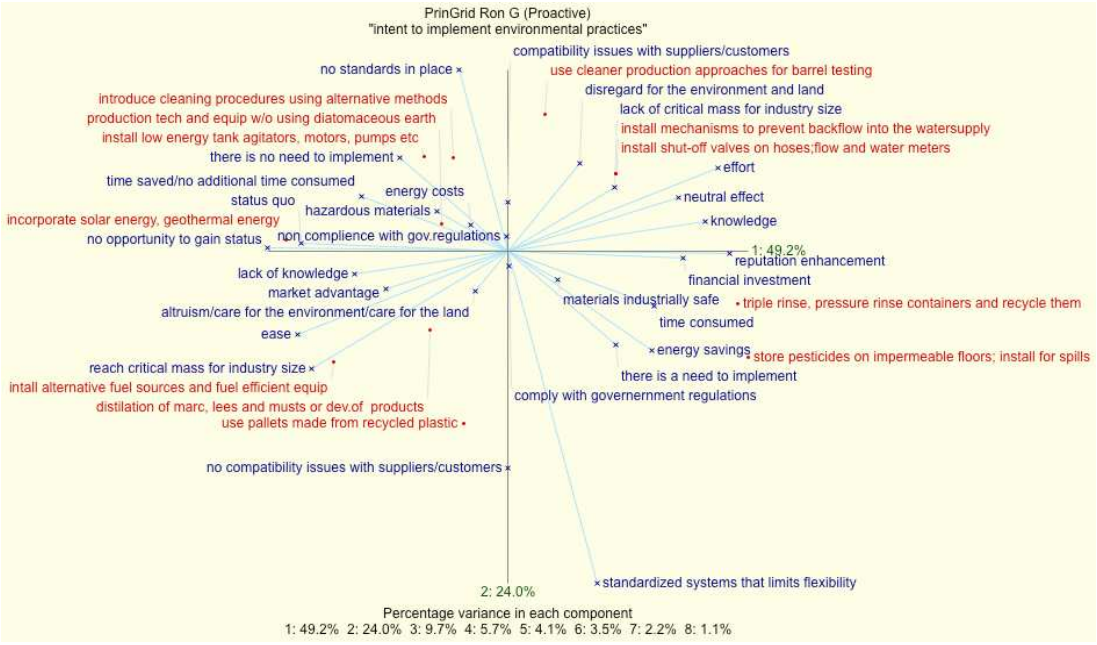
Pilot Appendix 3 Cluster analysis reactive organization

Diagram 2



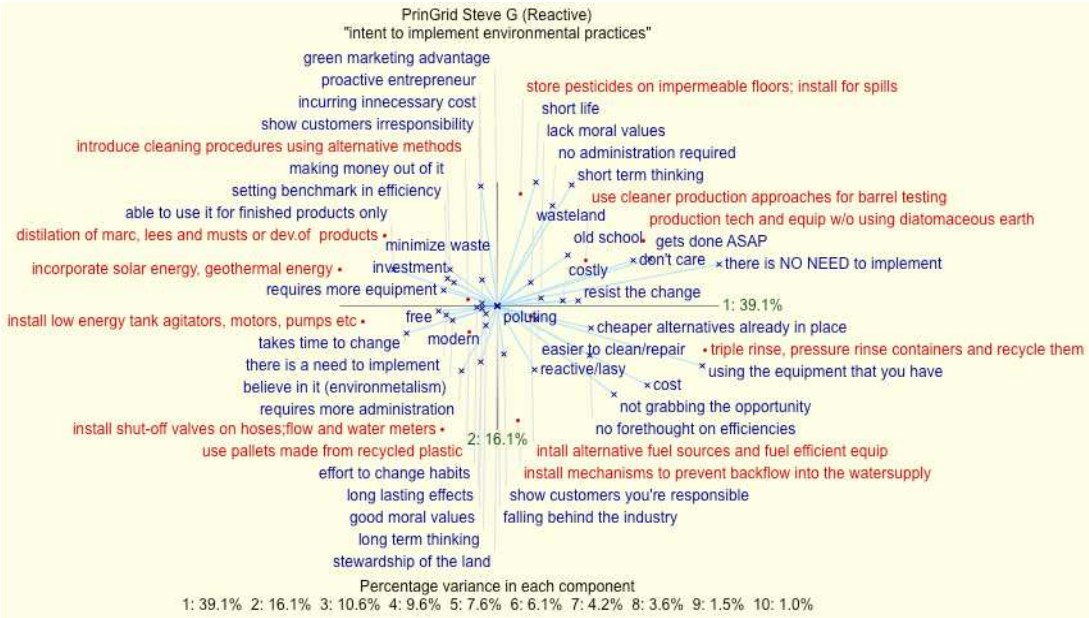
Pilot Appendix 4 Principal component analysis proactive organization

Diagram 1



Pilot Appendix 4 Principal component analysis reactive organization

Diagram 2



Pilot Appendix 5

Content analysis summary

	Proactive	**Reactive**
Attitudes	altruism	minimize waste
	effort	short term thinking
	lack of critical mass	old school
		stewardship of the land
		efforts to change habits
		takes time to change
	3	6
Social norms	compatibility with suppliers	good moral values
	Comply with gov.regulations	believe in it
		setting benchmark in efficiency
		show customers responsibility
		proactive entrepreneur
	2	5
Perceived Behavioural Control	financial investment	requires administration
	hazardous materials	requires equipment
	knowledge	cheaper alternative in place
	energy costs	investment
	Standardised sys.	
	5	4
Reputation	reputation enhancement	
	1	0
Gain/loss	time consumed	costly
	market advantage	long lasting effect
		easy to clean/repair
		green marketing advantage
		making money out of it
	2	5

Pilot Appendix 5 continued
Content analysis summary:

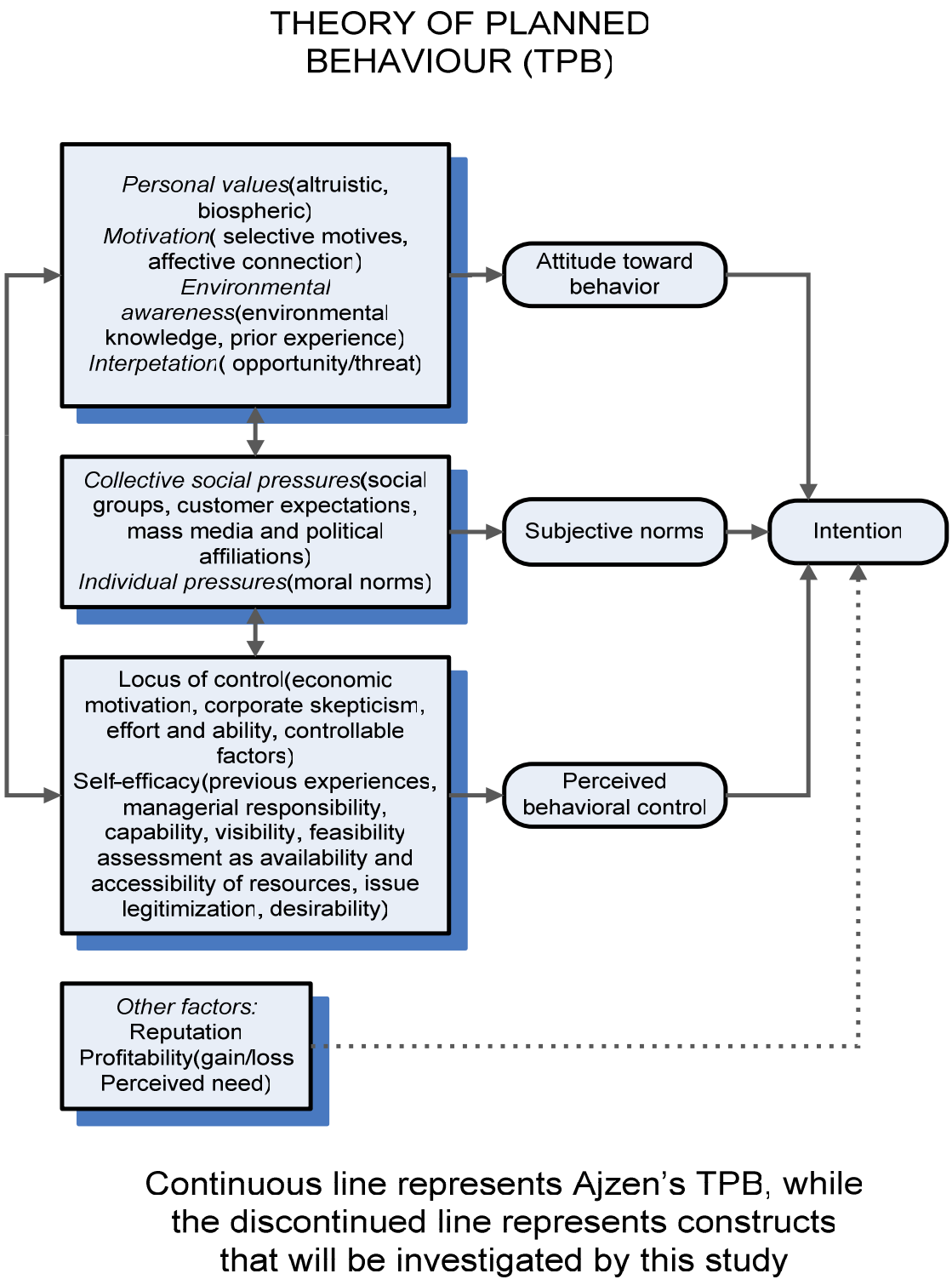
	Total constructs		**Proactive**	**%**	**Reactive**	%
Attitudes	9	27%	3	23%	6	30%
Social norms	7	21%	2	15%	5	25%
PBC	9	27%	5	38%	4	20%
Reputation	1	3%	1	8%	0	0%
Gain/loss	7	21%	2	15%	5	25%
Total	33	100%	13	100%	20	100%

Pilot Appendix 6 Honey 's (1979) Technique

	Proactive	% similarity	Reactive	% Simil.
Attitudes	altruism	80	efforts to change habbits	63.75
	effort	73.75	takes time to change	62.5
	lack of critical mass	73.75	short term thinking	60
			old school	60
			stewardship of the land	53.75
			minimize waste	52.5
	3	75.83	6	58.75
Social norms	Comply with gov.regulations	88.75	show customers responsibility	68.75
	compatibility with suppliers	71.25	setting benchmark in efficiency	67.5
			good moral values	65
			proactive entrepreneur	63.75
			believe in it	62.5
	2	80.00	5	65.5
PBC	hazardous materials	85	requires administration	63.75
	financial investment	76.25	investment	62.5
	knowledge	75	cheaper alternative in place	60
	energy costs	72.5	requires equipment	56.25
	Standardised sys.	62.5		
	5	74.25	4	60.62
Reputation	reputation enhancement	70		
	1	70	0	
Gain/loss	market advantage	80	costly	72.5
	time consumed	73.75	long lasting effect	67.5
			easy to clean/repair	67.5
			making money out of it	66.25
			green marketing advantage	51.25
	2	76.87	5	65.00

50-65% L
66-79% I
80-100% H

Appendix 2



Continuous line represents Ajzen's TPB, while the discontinued line represents constructs that will be investigated by this study

Appendix 3 Research Overview

Title: Implementation of operational environmental practices in Ontario (Canada) wine industry: perceptions, constructs, intent

Researcher: *Carmen Dima, doctoral candidate, Edinburgh Business School, Scotland, UK*

This research is being conducted as part of Carmen Dima's doctoral study (*Doctor in Business Administration program)* at Heriot Watt University, Edinburgh Business School, Scotland, UK.

This research projects has not been commissioned by government authorities or funding organizations and is not intended to evaluate businesses.

Objective of the Research:

Identifying paths in archiving environmental sustainability was instigated by Wine Council of Ontario and culminated with the release of Environmental Charter for Wine making Industry in 2007 (Sustainable wine making Ontario). The Charter outlines environmental best practices and establishes benchmarks for the grape and wine producers in Ontario related to water, waste, and energy conservation as well as pest and pesticide management. Even though compliance with the Charter's recommendations is not mandatory, the organizations are advised to review their practices not only as a proactive strategic approach but also as a means to sustain their growth and competitive advantage.

The environmental issues present in Ontario at this time have triggered different responses within the existing organizations. While some wineries were eager to adopt ground-breaking operational practices, other chose to maintain their existing processes and delay any new implementations. This study's ***aim*** therefore, is to understand the constructs/concepts behind different responses regarding implementation of environmental practices at the operational level within Ontario's wine industry. ***The research seeks to understand what is happening in the wine industry in Ontario, rather than testing or surveying the participants. It is anticipated that relevant findings from this study will inform policy and practice and assist in the process of advancing wine industry's sustainability.***

Focus of the thesis is to gain a deeper understanding from the key decision makers of their constructs related to the intent of implementation of environmental practices within their operational processes by using the theory of planned behaviour.

The objective of the study is to understand the intent to implement environmental practices as part of operational processes in organizations within the Ontario grape and wine industry by determining the constructs that underlie attitudes, social norms and perceived control as elements of intention (as identified by the Theory of Planned Behaviour).

Appendix 3 continued

Research Questions:

1. What are the constructs that underlie the decision makers' thinking in regards to intent to implement environmental practices at the operational level and how do they differentiate between organizations?

2. To what extend do the categorized constructs for behavioural attitudes, subjective norm and perceived behavioural control account for the variance in strength of the decision-makers intention to adopt environmental practices at the operational level?

3. What is the magnitude of the gain/loss and reputation constructs and how it affects the decision to implement environmental practices at the operational level?

4. What are the constructs and categories that impact the *need to implement* environmental practices at the operational level? Which environmental practices are deemed unnecessary (not needed) by the industry?

In view of these questions, a constructivist approach, multiple case embedded case study design is used to explore the determinants of intention. The data collection process is based on repertory grid: a useful instrument in eliciting personal beliefs and meanings (constructs) that allows individuals to reveal their own personal views and concepts. Twelve recommended environmental practices (from the WCO Environmental Charter) are evaluated by each participant and the specific expressed constructs are investigated to identify differences between organizations. The elicitation process is conducted during an interview that is anticipated to last between 1-1.5 hours.

As the study seeks individual opinion from the decision makers based on their own experiences, business confidentiality and decision-makers' confidentiality is guaranteed and any paperwork generated is coded so that no individuals or organizations are identified.

Appendix 4 Content Analysis

Category	Subcategory	Total		Proactive		Reactive	
	Efficiency	10	3.17%	3	2.11%	7	4.05%
	Ease to implement	6	1.90%	4	2.82%	2	1.16%
	Affordability	19	6.03%	7	4.93%	12	6.94%
	Planning and general resources	7	2.22%	4	2.82%	3	1.73%
	Labor	4	1.27%	2	1.41%	2	1.16%
	Administration	5	1.59%	3	2.11%	2	1.16%
	Time	5	1.59%	1	0.70%	4	2.31%
	Knowledge/training	14	4.44%	7	4.93%	7	4.05%
	Maintenance	6	1.90%	3	2.11%	3	1.73%
	New equipment	7	2.22%	2	1.41%	5	2.89%
	Climate	2	0.63%	1	0.70%	1	0.58%
	Changes to existing systems	7	2.22%	3	2.11%	4	2.31%
	Water consumption	10	3.17%	4	2.82%	6	3.47%
	Financial investment	20	6.35%	10	7.04%	10	5.78%
	Known and expected long-lasting positive outcomes	8	2.54%	2	1.41%	6	3.47%
	Effort	5	1.59%	2	1.41%	3	1.73%
PBC		**135**	**42.86%**	**58**	**40.85%**	**77**	**44.51%**

Appendix 4 continued

Category	Subcategory	Total		Proactive		Reactive	
	Domestic industry standards	19	6.03%	9	6.34%	10	5.78%
	Government	12	3.81%	5	3.52%	7	4.05%
	Customers' expectations	5	1.59%	3	2.11%	2	1.16%
	Moral Values	1	0.32%	0	0.00%	1	0.58%
	International Compatibility	3	0.95%	1	0.70%	2	1.16%
	Market size	6	1.90%	2	1.41%	4	2.31%
Subjective norms		**46**	**14.60%**	**20**	**14.08%**	**26**	**15.03%**
	Long-term thinking and responsibility for environment and future	15	4.76%	3	2.11%	12	6.94%
	Environmental identity	3	0.95%	1	0.70%	2	1.16%
	Health and Safety for employees and environment	12	3.81%	5	3.52%	7	4.05%
	Pollution	7	2.22%	3	2.11%	4	2.31%
	Wine contamination	11	3.49%	7	4.93%	4	2.31%
	Stewardship of the land	19	6.03%	13	9.15%	6	3.47%
Attitude		**67**	**21.27%**	**32**	**22.54%**	**35**	**20.23%**
	ROI/ Payback/LT profitability	22	6.98%	10	7.04%	12	6.94%
	Bottom line impact	26	8.25%	13	9.15%	13	7.51%
Profit		**48**	**15.24%**	**23**	**16.20%**	**25**	**14.45%**
	Positioning within customer's perception	6	1.90%	3	2.11%	3	1.73%
	Positioning within industry partners	13	4.13%	6	4.23%	7	4.05%
Reputation	**32**	**19**	**6.03%**	**9**	**6.34%**	**10**	**5.78%**
	Total constructs	315	100.00%	142	45.08%	173	54.92%

Appendix 5 Content Analysis Honey's (1979) indices

5.1 PBC					
Proactive			**Reactive**		
Efficiency		HIL			HIL
P7-9	**73.44**	**I**	R1-17	**89.47**	**H**
P3-8	**73.44**	**I**	R10-7	**88.16**	**H**
P1-10	**59.09**	**L**	R1-8	**88.16**	**H**
			R4-3	**86.11**	**H**
			R6-13	**85.00**	**H**
			R6-10	**80.00**	**H**
			R2-19	**79.76**	**I**
Ease to implement					
P6-1	**91.18**	**H**	R9-12	**77.50**	**I**
P10-6	**78.85**	**I**	R8-15	**66.67**	**L**
P9-5	**73.08**	**I**			
P4-12	**70.00**	**I**			
Affordability					
			R1-5	**94.74**	**H**
P6-14	**82.35**	**H**	R10-16	**90.79**	**H**
P6-6	**82.35**	**H**	R9-4	**87.50**	**H**
P8-6	**82.14**	**H**	R5-2	**83.33**	**H**
P3-17	**81.25**	**H**	R2-12	**80.95**	**H**
P3-6	**76.56**	**I**	R9-9	**80.00**	**H**
P9-2	**71.15**	**I**	R7-8	**79.69**	**I**
P4-14	**70.00**	**I**	R4-16	**79.17**	**I**
			R6-2	**78.33**	**I**
			R6-8	**78.33**	**I**
			R7-4	**78.13**	**I**
			R8-5	**71.67**	**I**
Planning and general resources					
P10-12	**78.85**	**I**	R4-5	**80.56**	**H**
P8-13	**78.57**	**I**	R4-9	**80.56**	**H**
P4-13	**78.33**	**I**	R3-6	**70.83**	**I**
P2-10	**67.65**	**L**			
Labour					
P8-11	**67.86**	**L**	R10-10	**84.21**	**H**

Appendix 5 Continued **5.1 PBC**					
Administration					
P6-10	**85.29**	**H**	R10-12	**86.84**	**H**
P10-8	**71.15**	**I**	R9-13	**82.50**	**H**
P1-5	**63.64**	**L**			
Time					
P9-6	**88.46**	**H**	R9-10	**85.00**	**H**
			R4-19	**79.17**	**I**
			R10-9	**78.95**	**I**
			R5-1	**74.58**	**I**
Knowledge					
P4-2	**86.67**	**H**	R1-15	**88.16**	**H**
P9-3	**78.85**	**I**	R10-2	**80.26**	**H**
P4-15	**78.33**	**I**	R6-9	**80.00**	**H**
P5-5	**75.00**	**I**	R7-12	**78.13**	**I**
P2-17	**73.53**	**I**	R5-14	**75.00**	**I**
P7-6	**73.08**	**I**	R8-11	**71.67**	**I**
P8-10	**71.43**	**I**	R3-12	**60.42**	**L**
Maintenance					
P7-3	**86.54**	**H**	R2-14	**88.10**	**H**
P8-7	**78.57**	**I**	R5-5	**73.61**	**I**
P6-5	**76.47**	**I**	R3-11	**64.58**	**L**
New equipment					
P10-3	**90.38**	**H**	R9-2	**88.75**	**H**
P2-7	**75.00**	**I**	R1-14	**88.16**	**H**
			R10-1	**85.53**	**H**
			R4-17	**80.56**	**H**
			R2-9	**78.57**	**I**
Climate					
P2-13	**75.00**	**I**	R4-4	**80.56**	**H**
Changes to existing systems					
P10-7	**82.69**	**H**	R8-10	**90.00**	**H**
P2-6	**73.53**	**I**	R1-18	**88.16**	**H**
P1-9	**72.73**	**I**	R2-8	**86.90**	**H**
			R7-5	**75.00**	**I**

Appendix 5 continued 5.1 PBC	**Proactive**			**Reactive**	
P3-16	**85.94**	**H**	R2-13	**83.33**	**H**
P8-12	**78.57**	**I**	R8-13	**80.00**	**H**
P10-5	**73.08**	**I**	R10-3	**77.76**	**I**
			R6-6	**76.67**	**I**
			R7-15	**76.56**	**I**
Financial investment					
P10-11	**86.54**	**H**	R1-13	**93.42**	**H**
P9-1	**84.62**	**H**	R9-15	**90.00**	**H**
P8-5	**82.14**	**H**	R8-1	**88.33**	**H**
P4-6	**80.00**	**H**	R4-7	**87.50**	**H**
P5-9	**76.92**	**I**	R10-4	**81.58**	**H**
P6-4	**75.00**	**I**	R2-16	**78.57**	**I**
P7-5	**75.00**	**I**	R7-6	**76.56**	**I**
P2-2	**72.06**	**I**	R3-2	**75.00**	**I**
P1-1	**65.91**	**L**	R6-4	**70.00**	**I**
P1-3	**65.91**	**L**	R5-8	**69.44**	**I**
Known and expected long-lasting positive outcomes					
			R10-11	**89.47**	**H**
P5-10	**80.77**	**H**	R5-15	**87.50**	**H**
P5-8	**78.85**	**I**	R1-1	**85.53**	**H**
			R9-11	**85.00**	**H**
			R2-7	**82.14**	**H**
			R8-8	**80.00**	**H**
Effort					
P7-2	**82.69**	**H**	R9-1	**86.25**	**H**
P1-2	**63.64**	**L**	R5-16	**77.78**	**I**
			R3-10	**75.00**	**I**

Appendix 5 continued **5.2 Subjective Norms**					
Proactive			**Reactive**		
Domestic industry standards		HIL	*Domestic industry standards*		HIL
P10-9	**88.46**	**H**	R10-17	**90.79**	**H**
P5-11	**82.69**	**H**	R2-10	**89.29**	**H**
P6-9	**82.35**	**H**	R9-3	**88.75**	**H**
P2-1	**80.88**	**H**	R4-10	**87.50**	**H**
P4-9	**80.00**	**H**	R7-10	**87.50**	**H**
P4-1	**75.00**	**I**	R8-14	**86.67**	**H**
P9-12	**75.00**	**I**	R4-11	**86.11**	**H**
P9-10	**71.15**	**I**	R5-18	**80.56**	**H**
P9-7	**61.54**	**L**	R3-9	**77.08**	**I**
			R7-13	**75.00**	**I**
Government			*Government*		
P9-8	**84.62**	**H**	R1-16	**88.16**	**H**
P5-6	**76.92**	**L**	R2-15	**85.71**	**H**
P2-11	**73.53**	**L**	R4-1	**84.72**	**H**
P3-10	**73.44**	**L**	R10 -13	**80.26**	**H**
P4-7	**73.33**	**L**	R7-7	**76.56**	**I**
			R7-14	**73.44**	**I**
			R3-8	**58.33**	**L**
Customers' expectations			*Customers' expectations*		
P5-12	**80.77**	**H**	R2-4	**84.52**	**H**
P2-14	**79.41**	**I**	R8-4	**66.67**	**L**
P6-3	**75.00**	**I**			
Moral Values			*Moral Values*		
			R9-17	**90.79**	**H**
International Compatibility			*International Compatibility*		
P3-14	**90.63**	**H**	R1-3	**88.16**	**H**
			R5-4	**83.33**	**H**
Market size			*Market size*		
P9-4	**71.15**	**I**	R1-12	**88.16**	**H**
P7-4	**61.54**	**L**	R2-17	**80.95**	**H**
			R5-9	**80.56**	**H**
			R5-12	**79.17**	**I**

Appendix 5 continued 5.3 Attitudes					
Proactive			**Reactive**		
Long-term thinking and responsibility for environment and future					
P4-3	**85.00**	**H**	R10-15	**94.74**	**H**
P2-5	**77.94**	**I**	R4-12	**91.67**	**H**
P3-5	**70.31**	**I**	R6-1	**90.00**	**H**
			R9-14	**90.00**	**H**
			R9-16	**90.00**	**H**
			R9-18	**90.00**	**H**
			R2-3	**88.10**	**H**
			R8-2	**83.33**	**H**
			R7-2	**82.81**	**H**
			R7-3	**79.69**	**I**
			R8-7	**68.33**	**L**
			R3-5	**52.08**	**L**
Environmental identity					
P4-5	**85.00**	**H**	R6-15	**83.33**	**H**
			R8-3	**93.33**	**H**
Health and Safety for employees and environment					
P9-9	**86.54**	**H**	R4-2	**93.06**	**H**
P3-7	**82.81**	**H**	R5-6	**86.11**	**H**
P2-9	**79.41**	**I**	R6-14	**75.00**	**I**
P6-8	**79.41**	**I**	R3-7	**68.75**	**L**
P2-16	**75.00**	**I**	R8-9	**68.33**	**L**
			R7-11	**64.06**	**L**
			R3-4	**60.42**	**L**
Pollution					
P8-3	**82.14**	**H**	R1-2	**90.79**	**H**
P3-15	**73.44**	**I**	R9-6	**90.00**	**H**
P1-8	**59.09**	**L**	R2-21	**83.33**	**H**
			R2-6	**82.14**	**H**

Appendix 5 continued 5.3 Attitudes					
Wine contamination	*Proactive*		*Reactive*		
P8-8	**87.50**	**H**	R1-11	**86.84**	**H**
P5-4	**84.62**	**H**	R6-5	**86.67**	**H**
P6-16	**80.88**	**H**	R4-14	**83.33**	**H**
P7-1	**80.77**	**H**	R10-5	**78.95**	**I**
P3-1	**79.69**	**I**			
P10-4	**75.00**	**I**			
P5-1	**75.00**	**I**			
Stewardship of the land					
P8-4	**87.50**	**H**	R5-17	**93.06**	**H**
P4-4	**86.67**	**H**	R4-15	**91.67**	**H**
P7-7	**84.62**	**H**	R9-8	**91.25**	**H**
P5-2	**82.69**	**H**	R1-4	**88.16**	**H**
P5-3	**82.69**	**H**	R5-10	**81.94**	**H**
P7-11	**76.92**	**I**	R7-1	**78.13**	**I**
P3-2	**76.56**	**I**			
P6-17	**76.47**	**I**			
P9-11	**75.00**	**I**			
P3-12	**73.44**	**I**			
P10-2	**73.08**	**I**			
P10-1	**71.15**	**I**			
P2-8	**67.65**	**L**			

Appendix 5 continued

5.4 Profitability and Reputation

Proactive			**Reactive**		
ROI/ Payback/LT profitability					
P3-9	**82.81**	**H**	R10-6	**93.42**	**H**
P6-7	**82.35**	**H**	R10-19	**92.11**	**H**
P10-10	**80.77**	**H**	R5-11	**90.28**	**H**
P4-10	**78.33**	**I**	R1-10	**86.84**	**H**
P2-15	**75.00**	**I**	R9-7	**86.25**	**H**
P5-7	**75.00**	**I**	R2-5	**84.52**	**H**
P2-4	**73.53**	**I**	R10-14	**82.89**	**H**
P5-13	**71.15**	**I**	R2-20	**82.14**	**H**
P1-11	**68.18**	**L**	R5-13	**81.94**	**H**
P1-6	**63.64**	**L**	R3-3	**77.08**	**I**
			R7-16	**76.56**	**I**
			R6-3	**73.33**	**I**
Bottom line impact					
P8-9	**87.50**	**H**	R1-19	**92.11**	**H**
P6-11	**83.82**	**H**	R1-6	**88.16**	**H**
P4-8	**83.33**	**H**	R4-8	**84.72**	**H**
P10-13	**82.69**	**H**	R2-18	**84.52**	**H**
P7-12	**82.69**	**H**	R2-11	**84.52**	**H**
P7-13	**80.77**	**H**	R10-8	**84.21**	**H**
P8-1	**80.36**	**H**	R1-7	**84.21**	**H**
P3-4	**78.13**	**I**	R5-3	**81.94**	**H**
P8-14	**75.00**	**I**	R2-2	**80.95**	**H**
P2-3	**73.53**	**I**	R8-6	**78.33**	**I**
P6-12	**73.53**	**I**	R3-1	**77.08**	**I**
P2-18	**70.59**	**I**	R8-12	**73.33**	**I**
P7-8	**67.31**	**L**	R6-7	**71.67**	**I**

Appendix 5 continued

5.4 Profitability and Reputation continued

Reputation					
Proactive			**Reactive**		
Positioning within customer's perception					
P8-2	**82.14**	**H**	R7-9	**85.94**	**H**
P7-10	**80.77**	**H**	R9-5	**83.75**	**H**
P6-2	**77.94**	**I**	R6-11	**78.33**	**I**
Positioning within industry partners			*Positioning within industry*		
P4-11	**83.33**	**H**	R10-18	**92.11**	**H**
P3-13	**82.81**	**H**	R1-9	**88.16**	**H**
P9-14(13)	**82.69**	**H**	R5-7	**86.11**	**H**
P6-13	**79.41**	**I**	R9-19	**85.00**	**H**
P3-3	**76.56**	**I**	R2-1	**83.33**	**H**
P1-7	**68.18**	**L**	R6-12	**78.33**	**I**
			R9-20	**71.25**	**I**

Appendix 6

Summary of HIL indices by group

Category	**Subcategory**	**Overall**	**Proactive**	**Reactive**
	Efficiency	H	I	H
	Ease to implement	I	I	mixed
	Affordability	H	H	H
	Planning and general resources	I	I	H
	Labor	mixed	L	H
	Administration	H	mixed	H
	Time	I	H	I
	Knowledge/training	I	I	I
	Maintenance	I	I	mixed
	New equipment	H	mixed	H
	Climate	mixed	I	H
	Changes to existing systems	H	I	H
	Water consumption	mixed	mixed	mixed
	Financial investment	H	I	H
	Known and expected long-lasting positive outcomes	H	mixed	H
	Effort	I	mixed	I
PBC		**H**	**I**	**H**

Appendix 6 continued

Category	Subcategory	Overall	Proactive	Reactive
	Domestic industry standards	H	H	H
	Government	I	L	H
	Customers' expectations	mixed	I	mixed
	Moral Values	mixed	none	H
	International Compatibility	H	H	H
	Market size	H	mixed	H
Subjective norms		**H**	**I**	**H**
	Long-term thinking and responsibility for environment and future	H	I	H
	Lifestyle	H	H	H
	Health and Safety for employees and environment	mixed	I	L
	Pollution	H	mixed	H
	Wine contamination	H	H	H
	Stewardship of the land	H	I	H
Attitudes		**H**	**I**	**H**
	ROI/ Payback/LT profitability	H	I	H
	Bottom line impact	H	H	H
Profitability		**H**	**H**	**H**
	Positioning within customer's perception	H	H	H
	Positioning within industry partners	H	H	H
Reputation		**H**	**H**	**H**

Appendix 7 Cluster analysis sorted by group

7.1 Proactive Organizations				% similarity
P3	cluster 1	allows you to improve the land and environment	degrade the land and environment	100%
P3	cluster 1	reducing emissions hence cleaner practice	increase pollution	100%
P8	cluster 1	requires an investment	stick with status quo	100%
P8	cluster 1	expensive to implement	affordable to implement	100%
P10	cluster 1	keeps the land healthy--synthetic feeding for the land		100%
P10	cluster 1	reflects stewardship of the land--exploit the land for max yield		100%
P4	cluster1	more sustainable for the future	not sustainable: health and pollution hazard	98%
P4	cluster1	projects a good image	projects a careless attitude	98%
P3	cluster 2	highly effective	high contamination resulting	96%
P3	cluster 2	thinking long term	thinking short term	96%
P4	cluster1	preserves land and resources	lose land fertility	96%
P1	cluster 1	increased operating costs (labor, gas)	more cost efficient using the existing practices	94%
P1	cluster 1	affects profitability positively	reduces profitability	94%
P10	cluster 2	affects profitability positively--lowers profitability		94%
P10	cluster 2	reduces operating costs--negative impact on your operating costs		94%
P3	cluster 3	shows good stewardship of the land	exploiting the environment	93%
P3	cluster 4	reduce wine and environment contamination	contaminate wine and environment	93%

7.1 Proactive Organizations continued				
P3	cluster 4	being part of our identity; our legacy	forgotten in long run	93%
P4	cluster 2	easy to implement	difficult to implement	92%
P4	cluster 2	is inexpensive to implement	expensive to implement	92%
P2	cluster1	capital investment required to start	no investment required	90%
P2	cluster1	customers will see it as valuable	decrease the value of the business	90%
P2	cluster1	systems new hence experience required	no experience required	90%
P3	cluster 5	makes sense economically	non sense economically	90%
P3	cluster 5	increasing marketing advantage	getting bad reputation	90%
P4	cluster 3	requires capital investment	keep what you have for now	90%
P4	cluster 3	increases the bottom line	keep as it is ;no increase in profitability	90%
P6	cluster 1	high investment costs	use the money to improve existing processes	90%
P6	cluster 1	increased insurance costs	keeping insurance costs as it is	90%
P7	cluster 1	reduction in operating costs: is free	increase in operating costs: buy from other sources	90%
P7	cluster 1	reduction in long-term operating costs	no long term effect on operating costs	90%
P7	cluster 2	reduction in wine contamination	increase possibility of contamination	90%
P7	cluster 2	high effort required	low effort required	90%
P9	cluster1	knowledge--lack of knowledge		90%
P9	cluster1	financial investment--status quo		90%
P9	cluster1	altruism/care for the environment/care for the land--disregard for the environment and land		90%

7.1 Proactive Organizations continued				
P9	cluster1	market advantage--neutral effect		90%
P3	cluster 5	need to implement	no need to implement	88%
P3	cluster 5	compatibility with proven international models	develop your own model	88%
P4	cluster 4	requires planning of resources--no planning required		88%
P4	cluster 4	requires more training--not sure if it will work		88%
P4	cluster 4	government help, grants, incentives required--no government help required		88%
P5	cluster 1	gentle and noninvasive care for the land	reconstructing the soil mechanically	88%
P5	cluster 1	improvement of soil in a natural way--depleting the soil; using chemical alternatives		88%
P5	cluster 1	reduce contamination of wine	create a sterile, unnatural environment for the wine	88%
P6	cluster 2	gives you a competitive advantage	lose customers' appreciation of	88%
P6	cluster 2	affects customers' perceptions	no effect on customers' perceptions	88%
P6	cluster 3	need to implement	no need to implement	88%
P6	cluster 3	is an economic necessity	not an economic necessity	88%
P8	cluster 2	requires an investment	stick with status quo	88%
P8	cluster 2	requires ongoing maintenance	less maintenance required	88%
P8	cluster 2	saves us money in long run--cost us more in long run		88%
P9	cluster 2	comply with government regulations--non compliance with gov.regulations		88%
P9	cluster 2	hazardous materials--materials industrially safe		88%
P9	cluster 2	time consumed--time saved/no additional time consumed		88%

7.1 Proactive Organizations continued				
P9	cluster 2	there is a need to implement--there is no need to implement		88%
P10	cluster 3	purchase more equipment--use the equipment that you have		88%
P10	cluster 3	requires an investment--continue with the existing practices		88%
P5	cluster 2	proven efficiencies	still experimenting, efficiencies not proven yet	85%
P5	cluster 2	operating cost efficiencies known	cost efficiencies not known	85%
P7	cluster 3	need to implement	no need to implement	85%
P7	cluster 3	requires more maintenance	less maintenance required	85%
P8	cluster3	keeps the soil healthy--less sustainable (soil)		85%
P8	cluster3	reduces pollution of environment--increases pollution		85%
P8	cluster3	need to implement--no need to implement		85%
P8	cluster3	reduces contamination of wine--contaminates wine		85%
P9	cluster 3	energy costs--energy savings		85%
P9	cluster 3	compatibility issues with suppliers/customers--no compatibility issues with suppliers/customers		85%
P1	cluster2	no modification required to existing equipment	modification required to existing equipment	83%
P1	cluster2	increased manpower	less manpower required	83%
P2	cluster2	poses safety issues	no safety issues	83%
P2	cluster2	subject to climate impact	no climate impact	83%
P4	cluster 5	need more info before implementing	use what we have	83%
P4	cluster 5	need to implement	no need to implement	83%
P8	cluster 4	gives you a marketing advantage--lose customers		83%
P8	cluster 4	allows reuse of waste--pay to have it removed		83%
P8	cluster 4	is cost effective--not cost effective		83%

7.1 Proactive Organizations continued				
P10	cluster 4	needs to be an industry standard--short-term thinking		83%
P10	cluster 4	requires changes to the existing systems--keep an eye on the budget-no changes		83%
P10	cluster 4	local resources needed--use alternate resource locations		83%
P2	cluster3	concern about environment a business objective	concern about environ.not a business objective	81%
P2	cluster3	reduced costs in the long run	high operation costs	81%
P5	cluster 3	negative impact on profitability	no impact on profitability	81%
P5	cluster 3	high capital investment required	using existing technologies (no investment)	81%
P6	cluster 4	need a workable systems in place within the industry	already accepted and used by the whole system	81%
P6	cluster 4	requires more administration	no additional administration required	81%
P6	cluster 4	justifies ROI	compromising bank covenants	81%
P9	cluster 4	lack of critical mass for industry size--reach critical mass for industry size		81%
P9	cluster 4	effort--ease		81%

Appendix 7 **7.2 Reactive organizations**			% similarity
R1	cluster 1	increase control over your operations--limited control over your operations	100 %
R1	cluster 1	project a positive image/ attitude--project a negative image/attitude	100 %
R9	cluster1	green marketing advantage--falling behind the industry	100 %
R9	cluster1	minimize waste--polluting	100 %
R9	cluster2	green marketing advantage--falling behind the industry	98%
R9	cluster2	stewardship of the land--wasteland	98%
R10	cluster1	lower costs in the long-run--costs will go up higher	98%
R10	cluster1	set a standard and example for competitors and customers--going with status quo	98%
R1	cluster 2	reduction in carbon emission and pollution--increase in pollution	96%
R1	cluster 2	reduction in operational costs--increase in operational costs	96%
R6	cluster1	profitable--not profitable	96%
R6	cluster1	high initial cost required--alleviate the high cost by looking at other sources	96%
R1	cluster 3	increase in capital costs--decrease in capital costs	94%
R1	cluster 3	derived byproducts generates revenue--cost prohibited	94%
R2	cluster1	older facilities require large costs to implement--newer facilities is easier to implement	94%
R2	cluster1	increases operational costs--not knowing the potential cost involved	94%
R4	cluster1	less resources required to implement--additional resources required to implement	94%
R4	cluster1	generates time savings--requires longer time being spend	94%
R7	cluster1	makes me more competitive--makes me less competitive	94%
R7	cluster1	give you a market advantage--no market advantage prevalent	94%
R8	cluster1	brings savings in long run--more costly in long run	94%
R8	cluster1	less time and water used--requires more time and water	94%
R9	cluster3	cheaper alternatives already in place--incurring unnecessary cost	94%

7.2 Reactive organizations continued			
R9	cluster3	effort to change habits--resist the change	94%
R9	cluster4	cheaper alternatives already in place--incurring unnecessary cost	94%
R9	cluster4	requires more equipment--using the equipment that you have	94%
R10	cluster2	increase profitability--decrease profitability	94%
R10	cluster2	helps the industry move forward--industry falters and dies	94%
R10	cluster3	long lasting benefits--costs higher than benefits	94%
R10	cluster3	justifies the investment--waste time and money	94%
R10	cluster4	not enough info about efficiency--standard procedure already	94%
R10	cluster4	reduces operating cost--have to pay someone for the service	94%
R10	cluster5	need to learn how to operate it--don't buy it without knowledge	94%
R10	cluster5	takes time to implement--leave it as it is	94%
R1	cluster 4	feasible/affordable--nor feasible	92%
R1	cluster 4	need to implement--no need to implement	92%
R2	cluster 2	requires a high capital cost to implement--less capital cost and government requirements	92%
R2	cluster 2	cost of the equipment is prohibitive--cheaper equipment in place	92%
R5	cluster1	starts with small savings--not saving at all	92%
R5	cluster1	high return on investment (ROI)--no return on investment (ROI)	92%
R5	cluster2	allows setting an example; establish a position; leadership and reputation--struggling; bad reputation	92%
R5	cluster2	gives a marketing advantage--stay behind the industry (no marketing advantage	92%
R6	cluster2	output is sufficient to justify implementation--output not sufficient for implementation	92%
R6	cluster2	requires more knowledge before implementation--knowledge already in place (known facts)	92%
R6	cluster3	increases the safety for the product (wine)--no safety in place; leave yourself open	92%
R6	cluster3	implementation reduces health hazards--increases health hazards	92%
R6	cluster4	good press, attracts customers--stay as it is	92%

7.2 Reactive organizations continued			
R6	cluster4	implementing will put you in a leadership position--leadership position not for you (don't care for it)	92%
R8	cluster2	reflects long term thinking--reflects short term thinking	92%
R8	cluster2	need to retrofit existing systems--use old technologies	92%
R8	cluster3	ensures future safety for our kids--no safe future for our kids	92%
R8	cluster3	need to implement--no need to implement	92%
R9	cluster5	making money out of it--not grabbing the opportunity	92%
R9	cluster5	proactive entrepreneur--reactive/lazy	92%
R9	cluster6	old school--modern	92%
R9	cluster6	short term thinking--long term thinking	92%
R2	cluster 2	market size no large enough to justify implementation--market size large enough or create a new market	91%
R1	cluster 5	improve efficiencies and reduce losses--wasting raw materials	90%
R1	cluster 5	scale of operations too small to justify it--perpetual growth and profitability to justify it	90%
R2	cluster3	considerable reduction in water consumption--using more water and manpower	90%
R2	cluster3	increased profitability--no profitability- no surviving	90%
R2	cluster4	generates less pollution--generate more pollution	90%
R2	cluster4	good sound business practice--no survival in the long run	90%
R3	cluster1	improves personal and business safety--increases personal and business hazards	90%
R3	cluster1	incur financial investment in equipment--spend money on electricity(operating costs increase)	90%
R4	cluster2	is safe for people and land--generates hazard for people and land	90%
R4	cluster2	need to implement--no need to implement	90%
R5	cluster3	shows care for the land--waste and hazard attitude	90%
R5	cluster3	need to implement--no need to implement	90%
R5	cluster4	is safe--is a health hazard	90%
R5	cluster4	facilitates soil environmental maintenance--requires waste management	90%
R6	cluster5	works best--doesn't work	90%

7.2 Reactive organizations continued			
R6	cluster5	look after the environment that you live in--selfish attitude	90%
R7	cluster2	reflects stewardship of the land--increases risks in the long run	90%
R7	cluster2	gives you the ability to continue business in the future--not able to survive in the future	90%
R7	cluster3	costly to implement--not costly to implement	90%
R7	cluster3	need government grants to speed up implementation--no gov. g4rands needed	90%
R8	cluster4	requires a financial investment--status quo using the same processes	90%
R8	cluster4	need to retrofit existing systems--use old technologies	90%
R2	cluster5	generates good returns--generates additional costs	88%
R2	cluster5	generates reduction in mtnce (manpower)--increase in manpower for mtnce	88%
R2	cluster 6	not knowing the length of the payback period--knowing about shorter payback period	88%
R2	cluster 6	not knowing if is efficient--knowing about proven efficiencies	88%
R9	cluster7	long lasting effects--short life	88%
R9	cluster7	requires more administration--no administration required	88%
R9	cluster8	takes time to change--gets done ASAP	86%
R9	cluster8	costly--free	86%
R3	cluster2	involves high effort--involves low effort	85%
R3	cluster2	requires high maintenance--requires low maintenance	85%
R4	cluster4	an optional alternative only--keep status quo for existing methods	85%
R4	cluster4	reduction in water consumption--increase in water consumption	85%
R4	cluster5	standards in place and established--lack of standards	85%
R4	cluster5	compatibility (acceptance) between suppliers and customers practices--incompatibility between suppliers and customers practices	85%
R5	cluster5	having technical knowledge available--not having the technical knowledge available	85%
R5	cluster5	industry size to small for the investment--appropriate industry size in place	85%
R7	cluster4	reflects stewardship of the land--increases risks in the long run	85%
R7	cluster4	has long term implications--short term	85%

7.2 Reactive organizations continued			
R1	cluster 6	government incentives in place--no involvement for the government	83%
R1	cluster 6	consciousness about environment and land--ignorance about environment	83%
R3	cluster3	obtain ROI (faster)--alleviate further increases in prices(for operating expenses)	83%
R3	cluster3	generates costs--generates savings	83%
R7	cluster5	give you a market advantage--no market advantage prevalent	83%
R7	cluster5	need to implement--no need to implement	83%
R10	cluster6	reduces potential wine/product contamination--affects quality of wine negatively	83%
R10	cluster6	reduces consumption of water--be irresponsible about water consumption	83%
R4	cluster6	climate impacts of the functionality--no climate impact on the functionality	81%
R4	cluster6	government restriction in place--government incentives in place	81%

Appendix 8 Content analysis Inter-coder reliability test

8.1 Subcategories

Subcategories phase 1																																
	Long-term results/	Ease to	Affordab	Planning and general	Knowledge	New equipment	Change to existing	Water	ROI/ Payback	Impact on operations	Customc	Image (Media General)	Compe	Goverr	Custor	Moral	Internal Comp	L/T think and	Lifestyle	Hazard	Wine contamination	Steward land	Subtotal	Labour	Administration	Time	Maintenance	Fin inv	climate	Industry image	Effort	Pollut	Total
Known and	9																						**9**										9
Ease		4	10																				**14**										14
Affordability			15																				**15**										15
Resources				6	4		1																**11**	3	5	5	6						30
Knowledge					14																		**14**										14
Investm.	4					7																	**11**					21					32
Changes		1					7																**8**										8
Water								10															**10**										10
ROI, Payback									7	13													**20**										20
Profit impact									17	6													**23**										23
Leadership											6	6											**12**										12
Competitive												1											**1**							7			8
Domestic													10		4								**14**										14
Gov														12									**12**										12
Customers													14		1								**15**										15
Moral values																1							**1**										1
Industry																	1						**1**										1
Long-term																		15				2	**17**										17
Lifestyle																		1	2				**3**										3
Health																				11	2		**13**								5		18
Concern																					9		**9**										9
Concern																		2				17	**19**									9	28
	13	**5**	**25**	**6**	**18**	**7**	**8**	**10**	**24**	**19**	**6**	**7**	**24**	**12**	**5**	**1**	**1**	**18**	**2**	**11**	**11**	**19**	**252**										
Climate					0																								2				2
total	13	5	25	6	18	7	8	10	24	19	6	7	24	12	5	1	1	18	2	11	11	19		3	5	5	6	21	2	7	5	9	315
171																																	
0.67857143																																	
	0.464	0.278	1.488	0.262	1.000	0.306	0.254	0.397	1.905	1.734	0.286	0.028	1.333	0.571	0.298	0.004	0.004	1.214	0.024	0.567	0.393	1.433	14.242										
	4.17857	1.11	22.321	1.571	14	2.1389	1.7778	3.968	13.33	10.4048	1.7143	0.0278	13.33	6.86	0.3	0.004	0.004	18.2	0.0476	6.242	3.5357	24.353											
k1	**0.65932**			**Perrault-Lee**		**0.8144**	**at 5% confidence level= 0.7894 to .8394**																												

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Appendix 8 Content analysis Inter-coder reliability test

8.1 Subcategories continued

Subcategories Phase 2																																
	Efficienc	Ease	Affordab	Plannin	Labou	Admini	Time	Knowl	Maint	New	*Climat*	Changes	Water	Finan	Know	Effort	Domes	Gover	Custome	Moral	*Interna*	Market s	Longter	*En*	Health	Pollut	Wine	Ste	ROI/	Bottom li	Positio	Positi	Total
Efficiency	10																															10
Ease to		5																														5
Affordability			14																											5		19
Planning and				7																												7
Labour					4																											4
Administratio						5																										5
Time							5																									5
Knowledge/tr								14																								14
Maintenance									6																							6
New										7																						7
Climate											2																					2
Changes to												7																				7
Water													10																			10
Financial														20																		20
Known and															8																	8
Effort		1														4																5
Domestic industry standards																	19															19
Government																		12														12
Customers' expectations																			5													5
Moral Values																				1												1
Internationa																					3											3
Market size																						6										6
Longterm																							15										15
Environmen																								3									3
Health and																									12								12
Pollution																										7							7
Wine																											11						11
Stewardship																												19					19
ROI/																													22				22
Bottom line impact		1																												26			27
Positioning																															6		6
Positioning																																13	13
Total	10	7	14	7	4	5	5	14	6	7	2	7	10	20	8	4	19	12	5	1	3	6	15	3	12	7	11	19	22	31	6	13	315
308																																	
0.97777778																																	
	0.31746	0.11	0.8444	0.156	0.051	0.0794	0.0794	0.622	0.114	0.1556	0.0127	0.1556	0.317	1.27	0.2	0.063	1.146	0.46	0.0794	0.003	0.0286	0.1143	0.7143	0	0.457	0.16	0.38	1	1.5365	2.6571	0.114	0.54	14.1
k2	**0.97674**		**Perrault-Lee**		**0.988**	**at 5% confidence level= 0.9635 to 100%**																												

Appendix 8 Content analysis Inter-coder reliability test

8.2 Categories

Categories Phase 1									
	CDAttit	CDSub norm	CDPCB	CDProfit	CDReputation	total			
VPAttit	70					**70**			
VPSub norm		43	2			**45**			
VPPCB	5		132			**137**			
VPProfit				43		**43**			
VPReput					20	**20**			
total	**75**	**43**	**134**	**43**	**20**	**315**			
308									
0.97778									
	16.66666667	6.1428571	18.7015873	5.86984	1.26984127	48.6508			
	1166.666667								
		264.14286	2						
	5		2468.60952						
				252.403					
					25.3968254				
K1	**0.973718713**		**Perrault-Lee**		**0.986013297**	**at 5% confidence level= 0.9610 to 1**			

Appendix 8 Content analysis Inter-coder reliability test

8.2 Categories continued

Categories Phase 2									
	CDAttit	CDSub norm	CDPCB	CDProfit	CDReputation	total			
VPAttit	67					**67**			
VPSub norm		46				**46**			
VPPCB			130	5		**135**			
VPProfit				48		**48**			
VPReput					19	**19**			
total	**67**	**46**	**130**	**53**	**19**	**315**			
310									
0.98413									
	14.25079365	6.7174603	22.7142857	8.07619	1.146031746	52.9048			
	954.8031746								
		309.00317	2						
	5		2952.85714						
				387.657					
					21.77460317				
K2	**0.980922965**		**Perrault-Lee**		**0.990029661**	**at 5% confidence level= 0.9650 to 1**			

Appendix 9 Bivariate z-test for proportions								95% confidence		
Category	**Subcategory**	**Total**		**Proactive**		**Reactive**		**z**		
	Efficiency	10	3.17%	3	2.11%	7	4.05%	0.153	0.8808	accept H0
	Ease to implement	6	1.90%	4	2.82%	2	1.16%	0.129	0.8966	accept H0
	Affordability	19	6.03%	7	4.93%	12	6.94%	0.175	0.858	accept H0
	Planning and general resources	7	2.22%	4	2.82%	3	1.73%	0.094	0.9282	accept H0
	Labour	4	1.27%	2	1.41%	2	1.16%	0.022	0.984	accept H0
	Administration	5	1.59%	3	2.11%	2	1.16%	0.080	0.938	accept H0
	Time	5	1.59%	1	0.70%	4	2.31%	0.103	0.9204	accept H0
	Knowledge/training	14	4.44%	7	4.93%	7	4.05%	0.080	0.938	accept H0
	Maintenance	6	1.90%	3	2.11%	3	1.73%	0.034	0.976	accept H0
	New equipment	7	2.22%	2	1.41%	5	2.89%	0.114	0.914	accept H0
	Climate	2	0.63%	1	0.70%	1	0.58%	0.011	0.992	accept H0
	Changes to existing systems	7	2.22%	3	2.11%	4	2.31%	0.018	0.8572	accept H0
	Water consumption	10	3.17%	4	2.82%	6	3.47%	0.057	0.9602	accept H0
	Financial investment	20	6.35%	10	7.04%	10	5.78%	0.115	0.91	accept H0
	Known and expected long-lasting positive outcomes	8	2.54%	2	1.41%	6	3.47%	0.149	0.8886	accept H0
	Effort	5	1.59%	2	1.41%	3	1.73%	0.028	0.984	accept H0
PBC		**135**	**42.86%**	**58**	**40.85%**	**77**	**44.51%**	0.426	0.6744	accept H0

Appendix 9 Bivariate z-test for proportions continued

Category	Subcategory	Total	Proactive		%	ctive	%	z		
	Domestic industry st	19	6.03%	9	6.34%	10	5.78%	0.051	0.9602	accept H0
	Government	12	3.81%	5	3.52%	7	4.05%	0.047	0.9602	accept H0
	Customers' expecta	5	1.59%	3	2.11%	2	1.16%	0.080	0.938	accept H0
	Moral Values	1	0.32%	0	0.00%	1	0.58%			
	International Compatibility	3	0.95%	1	0.70%	2	1.16%	0.037	0.968	accept H0
	Market size	6	1.90%	2	1.41%	4	2.31%	0.074	0.9442	accept H0
Subjective norms		**46**	**14.60%**	**20**	**14.08%**	**26**	**15.03%**	0.090	0.9282	accept H0
	Longterm thinking and responsibility for enviroment and future	15	4.76%	3	2.11%	12	6.94%	0.315	0.7566	accept H0
	Environmental identity	3	0.95%	1	0.70%	2	1.16%	0.037	0.968	accept H0
	Health and Safety for employees and environment	12	3.81%	5	3.52%	7	4.05%	0.047	0.9602	accept H0
	Pollution	7	2.22%	3	2.11%	4	2.31%	0.018	0.984	accept H0
	Wine contamination	11	3.49%	7	4.93%	4	2.31%	0.214	0.8416	accept H0
	Stewardship of the land	19	6.03%	13	9.15%	6	3.47%	0.441	0.66	accept H0
Attitude		**67**	**21.27%**	**32**	**22.54%**	**35**	**20.23%**	0.230	0.818	accept H0

Appendix 9 Bivariate z-test for proportions continued										
Category	**Subcategory**	**Total**		**Proactive**		**Reactive**		**z**		
Profit		**48**	**15.24%**	**23**	**16.20%**	**25**	**14.45%**	0.168	0.865	accept H0
	Positioning within customer's perception	6	1.90%	3	2.11%	3	1.73%	0.034	0.976	accept H0
	Positioning within industry partners	13	4.13%	6	4.23%	7	4.05%	0.016	0.984	accept H0
Reputation	**34**	**19**	**6.03%**	**9**	**6.34%**	**10**	**5.78%**	0.051	0.9602	accept H0
	Total constructs	315	100.00%	142	45.08%	173	54.92%	1.738	0.0836	accept H0
	$H_0: P_1 = P_2$									
	$H_a: P_1 \neq P_2$									

Appendix 10 Triangulation of methods

	Cluster Analysis	Principal Component Analys	Content Analysis
Proactive	1. Stewardship of the land **and** affordability	1. ROI, payback, operating costs impact	1. Stewardship of the land
	2. Image impact **and** profitability	2. Ease to implement	2. Bottom line impact
	3. Knowledge **and** need of specific resources(time, effort, equipment)	3. Knowledge about the practice and its efficiency	3. Financial investment
	4. Industry standards, compatibility between business partners, industry size **and** the expected Return on investment and payback period	4. Government incentives	4. ROI/ Payback/LT profitability
		5. How much administration is required	5. Domestic industry standards
		6. Reputation enhancement	6. Affordability
		7. Market size,scale of operations	7. Knowledge/training
Reactive	1. Operational control **and** minimizing waste	1. Knowledge about the practice and its efficiencies and learning curve	1. Bottom line impact
	2. Image, marketing advantage **and** profitability /operating costs	2. Impact on operating expenses and profitability	2. Affordability
	3. Specific resources: water, effort, time, knowledge **and** Return on Investment/payback period	3. Size of Expected savings (time, money, energy long term and short term	3. Longterm thinking and responsibility for enviroment and future
	4. Market scale, industry standards **and** required changes to the existing systems	4. Affordability	4. ROI/ Payback /LT profitability
		5. Ease of implementation	5. Financial investment
		6. Ability to reuse the materials	6. Domestic industry standards
		7. Output sufficient to justify implementation	7. Knowledge/training
		8. Customer market advantage	